INSIDE: COMPETITIVE CATFISHING

Montana Outdoors

MONTANA FISH, WILDLIFE & PARKS | $3.50

MAY–JUNE 2020

HARVEST OR RELEASE?

RECONSIDERING A SANCTIFIED PRACTICE

IN THIS ISSUE:

BACK TO THE CAVERNS

BIRDS AREN'T RUINING OUR FISHING

SHARED SACRIFICE ON THE BIG HOLE

APPRECIATING THE LANDOWNER'S PERSPECTIVE

Montana Outdoors

FIRST PLACE MAGAZINE:
2005, 2006, 2008, 2011, 2017, 2018
Association for
Conservation Information

MONTANA OUTDOORS
VOLUME 51, NUMBER 3

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Montana Outdoors (ISSN 0027-0016) is published bimonthly by Montana Fish, Wildlife & Parks in partnership with our subscribers. Subscription rates are $12 for one year, $20 for two years, and $27 for three years. (Please add $3 per year for Canadian subscriptions. All other foreign subscriptions, airmail only, are $48 for one year.) Individual copies and back issues cost $4.50 each (includes postage). Although ***Montana Outdoors*** is copyrighted, permission to reprint articles is available by writing our office or phoning us at (406) 495-3257. All correspondence should be addressed to: ***Montana Outdoors***, Montana Fish, Wildlife & Parks, 930 West Custer Avenue, P.O. Box 200701, Helena, MT 59620-0701. Website: **fwp.mt.gov/mtoutdoors**. Email: **montanaoutdoors@mt.gov**.

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For address changes or subscription information call **800-678-6668**.
In Canada call **1+ 406-495-3257**

Postmaster: Send address changes to ***Montana Outdoors***, Montana Fish, Wildlife & Parks, P.O. Box 200701, Helena, MT 59620-0701. Preferred periodicals postage paid at Helena, MT 59601, and additional mailing offices.

FSC MIX Paper FSC® C007548

Montana Outdoors

MAY–JUNE 2020

FEATURES

12 Give a Big Hand for the Big Hole Applauding the consensus-based, collaborative approach to conserving this premier southwestern Montana trout and grayling river. *By Tom Reed*

20 Catfish Crazy For the past 20 years, Glasgow has stayed up late the first Saturday in June to celebrate the Catfish Classic and the Milk River's remarkable channel cat fishery. *By Andrew McKean. Photos by John Warner*

26 Has Catch-and-Release Gone Overboard? The case for harvesting more trout. *By Tom Dickson*

32 Living Limestone Revisiting the ever-changing geological wonders of Lewis & Clark Caverns, Montana's first state park. *By Julie Lue. Photos by Braden Gunem*

40 Blaming the Birds Are pelicans, cormorants, and other winged piscivores harming game fish populations? *By Jack Ballard*

DEPARTMENTS

2 LETTERS

3 TASTING MONTANA Simple and Fancy Fried Trout

4 OUR POINT OF VIEW Appreciating Landowners

5 FWP AT WORK Ladd Knotek, Fisheries Biologist

6 SNAPSHOTS

10 OUTDOORS REPORT

44 SKETCHBOOK Reassurance

45 OUTDOORS PORTRAIT American Avocet

INTO THE WONDERGROUND Visitors follow a guide through the entrance of world-famous Lewis & Clark Caverns, one of Montana's most popular state parks. Turn to page 32 to see what they discovered. Photo by Braden Gunem.

FRONT COVER Does releasing fish always make sense? See our story starting on page 26 to learn why some fisheries might be better off with more harvest. Photo by Pat Clayton/Engbretson Underwater Photography

Recommended reading

I've always enjoyed reading this great magazine, but your March-April 2020 edition was exceptional. I usually read your Tasting Montana page first, have tried many of the recipes, and they have increased my ability to cook gourmet meals using wild game. The article on raptors ["16 Raptors That Every Montanan Should (Kinda) Know"] was beneficial and timely because I recently challenged myself to improve my identification skills. Lastly, the Sketchbook column titled "Looking Down" was a reminder of my need to remain observant when afield. I've found that the more I see and understand, the more I love and feel a part of Montana. Keep up the great work.

Mike Getman
Lewistown

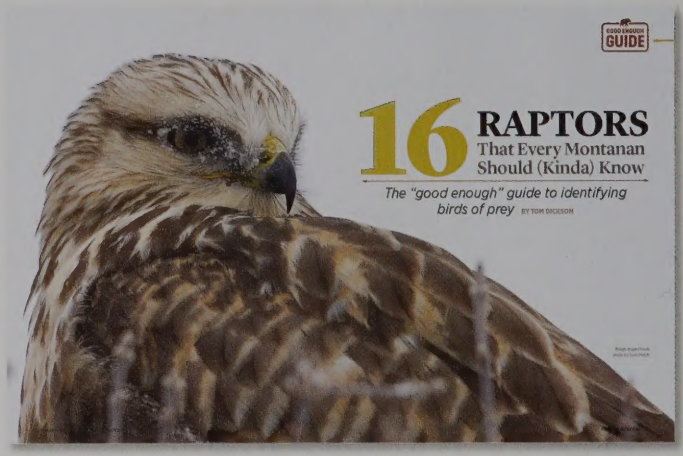
What a great issue. I enjoyed learning about the natural history of fishers, reestablishing trumpeter swans, and the editor's quest to spot spring wildflowers on Mount Helena. The recipe (Venison Carbonnade) looks delicious, and we are planning to prepare it using some locally grown lamb we have in the freezer. Our days of traveling back to Montana are probably over, but we sure do enjoy every copy of the magazine.

Harry Johnson
Redwood Falls, MN

Sooner State robins

My husband and I enjoyed the essay by Emma Marris on robins ("Welcome Back, Stranger," March-April). Every summer our yard is filled with robins. We always look forward to their arrival in early spring. This year we were pleasantly surprised to see 30 to 40 robins feasting on earthworms in our back yard in early February. They leave when the weather starts cooling down, which around here is usually in October.

Lee Ann Jones
Collensville, OK



AIS Mystery Boater?

I read with interest the "Plugging the Leaks" article in the March-April issue on how a boat from Chicago carrying invasive mussels escaped detection at two Montana AIS check stations. I have passed the Anaconda watercraft inspection station many times. Each time I think, "What a difficult job. The hours are long, and considerable time can pass between boats. It must be hard to stay alert, even though it is an important job protecting the safety of Montana valuable waterways."

The challenge at those stations reminds me of my college days in the 1960s, when I worked in a gas station. Back then gas stations were full service. Besides filling the tank, we checked the oil and fan belts. It was especially hard to remember the fan belts, as they were hard to see and usually did not need to be changed. The solution by the Gates Belt Company was what they called the Gates Mystery Man, who traveled the country with a frayed and worn belt. If a gas station attendant caught him, they got a reward of $25. The station I worked for would match that amount, so it was well worth our time to be vigilant and check those belts. Could a similar idea work at the AIS check stations? I can think of all kinds of other creative ways to keep inspectors on their toes and give rewards. Just a thought.

> **"The solution was what they called the Gates Mystery Man, who traveled the country with a frayed and worn belt."**

Gary Swant
Deer Lodge

Montana's odd connection with eastern Canada

I especially liked the article on the Continental Divide ("The Great Divide," July-August 2019) but had never before heard of Triple Divide Peak. Is it the only place in the world where that happens?

Kendall Smith
Boise, ID

The editor replies: Several readers wrote asking for more information on that geographical oddity, about 15 miles south of St. Mary.

Triple Divide Peak is where the east-west Laurentian Divide connects to the north-south Continental Divide in Glacier National Park. In answer to Mr. Smith's question, Triple Divide Peak is one of only a few places in the world where streams feeding three major watersheds originate. Snowmelt and rain go in three directions from the summit: southwest through the park to the Flathead, Clark Fork, and Columbia Rivers before emptying into the Pacific Ocean; southeast to Cut Bank Creek, then to the Marias, Missouri, and Mississippi Rivers to the Gulf of Mexico; and north into Hudson Bay Creek, through the two St. Mary's Lakes, into St. Mary's River, then up into the Saskatchewan River system northeast to Hudson Bay.

The Saskatchewan Watershed hydrologically connects a tiny portion of Montana with much of eastern Canada. It's not surprising then that Montana is home to four native fish species originally found only in the tiny triangle formed by the Saskatchewan River watershed where it lies within our state border: northern pike, lake whitefish, deepwater sculpin, and trout-perch. Some, like the northern pike, have since been distributed in other waters.

Correction

The bird we identified as a golden eagle on the bottom of page 25 of the article "16 Raptors That Every Montanan Should (Kinda) Know," (March-April 2020) is actually an immature bald eagle. We're still learning.

Simple and Fancy Fried Trout

Preparation time: 15 minutes | Cooking time: 30 minutes | Serves 4

Maybe one reason so few anglers keep trout anymore is that they don't know how to clean and cook fish. That's what one FWP biologist suggested while reviewing the article "Has Catch-and-Release Gone Overboard?" (page 26). There are other reasons, most notably the success of catch-and-release in protecting fish populations from overharvest. Yet biologists say that some populations could actually grow larger fish if more anglers kept a few smaller ones to eat.

If you're new to harvesting trout for their organic protein (talk about "wild-caught" seafood!), their delicious taste, and the benefits to fish population size structure, here's how it's done:

- Make a clean kill by firmly holding the fish belly side up in both hands and bringing the back of the head down crisply against a streamside rock or boat gunnel. If you are wading, keep the fish as cool as possible by placing it in the stream (anchored by a stringer or a few rocks to keep it from floating away). Or put it in a cooler with ice in your boat or vehicle.
- To clean a trout, turn it upside down and insert the tip of a small knife into the anal vent. Cut a deep slit all the way to and through the lower jaw. Pull out the intestines and, with the knife tip or your thumbnail, scrape away the bloodline along the spine. Pull or cut off the red gills. Give the cavity a brief wash. Keep the fish cool until ready to cook.
- The easiest way to cook trout when backpacking is to sprinkle dried cajun or seafood seasoning over the fish and in the cavity. Drizzle on a little oil, if you have some. Wrap the fish in aluminum foil, then put it on a campfire grill or coals for a few minutes on each side. The simplest method at home is to dry the fish with paper towels, dip it in a wash of one egg beaten with 1 T. water, then coat it in flour seasoned with salt and pepper. Fry in oil until both sides turn golden brown. Serve with a lemon slice. For something fancier, try the recipe at right.

—Tom Dickson is editor of Montana Outdoors.

This recipe for four small trout is based on a popular recipe by the Food Network's Anne Burrell. Halve the ingredients for two trout.

INGREDIENTS

1½ c. bread crumbs
1 clove garlic, smashed
2 t. dried oregano
Pinch crushed red pepper flakes
2 lemons, juiced, and the zest of 1 lemon
Salt
½ c. Dijon mustard
4 (10- to 12-ounce) trout, cleaned, rinsed, and dried with paper towels
Extra-virgin olive oil or vegetable oil
1 T. butter

DIRECTIONS

On a large plate, combine the bread crumbs, garlic, oregano, red pepper flakes, lemon zest, and salt to taste.

In a small bowl, mix the mustard and juice of one lemon. Brush both sides of the trout with mustard mixture. Coat the fish on both sides with the seasoned bread crumbs and press firmly to adhere the crumbs to the fish.

Preheat the oven to 250 degrees F.

Coat a large skillet with ½ inch of oil and place over medium-high heat. When the oil is hot, add the fish, skin side down, and cook 6 minutes. Flip the fish and cook the other side 2 minutes until golden brown and crispy. Drain fish on paper towels then place in a rack in the oven to keep warm. You will likely need to work in two batches to do four fish.

Discard the oil and wipe out any brown bits from the pan with a paper towel. Add the butter and remaining lemon juice and swirl to combine as the butter melts. Season with salt, to taste, and reduce by about half.

Transfer the fish to a serving platter, drizzle with the butter lemon sauce, and serve.

▶ *Another delicious recipe is Sesame-Crusted Pan-Fried Trout from our May-June 2017 issue: http://fwp.mt.gov/mtoutdoors/HTML/articles/recipes/sesametrout.htm.*

SHUTTERSTOCK

Appreciating landowners

Earlier this year I visited Havre and Malta to attend Block Management "cooperator appreciation" dinners. Each spring, FWP holds these events across Montana to thank landowners for participating in the program, which opens millions of acres of private property to public hunting.

As always at these dinners, I met many wonderful people and heard funny and heart-warming stories about ranching and farming life. On the drive home, I started thinking about "appreciation," and how it applies not only to Block Management cooperators but to all Montana landowners who share their land with wildlife.

As noted in my previous Director's Messages, a defining characteristic of the United States is that we view wildlife as part of commonly shared resources known as the public trust. The framework of laws and guiding principles that came out of the public trust concept—including the Migratory Bird Treaty Act, Endangered Species Act, and North American Model of Wildlife Conservation—have led to remarkable recoveries of elk, pronghorn, bighorn sheep, Canada geese, bald eagles, wolves, grizzly bears, and more.

While we celebrate those success stories and treasure the public trust concept that led to them, we also need to recognize the strains that expanding wildlife populations put on many ranchers, farmers, and rural communities.

Deer ravage hay bales and vegetable gardens. Elk consume crops, trample fences, and carry brucellosis that could infect cattle. Geese descend on crop fields. Wolves prey on sheep and cattle, or, at a minimum, cause stress that reduces livestock weight and disease tolerance.

Then there's Montana's growing number of grizzly bears. Yes, these are magnificent animals, symbols of wildness and rugged independence. But some are also troublemakers that raid beehives and orchards, break into outbuildings, harass or even kill livestock, and wander too close to where people work and live.

Add to all this the not uncommon challenges that come from allowing hunters to pursue Montana's restored game populations on private property: litter in parking areas, gates left open, trucks that chew up muddy roads and drive across "walk-in-only" areas, shot-up signs and farm equipment, phone calls and knocks on the front door that start before dawn and last all day. All while landowners and their families are trying to steward their land or livestock.

I want to make clear to all Montana landowners that we appreciate you, and we appreciate how hard it can sometimes be to have wildlife on your property. We appreciate that your land serves as vital habitat for wildlife and native plants. We appreciate the responsibilities you shoulder as stewards of your land.

Many of us in FWP grew up on farms or ranches. We understand your concerns about wildlife depredation, property rights, and trespass. We know many of you appreciate Montana's wildlife—even grizzly bears—just as everyone else does, but that you have to balance that admiration with earning a living and protecting your family's safety.

It's a given that the public trust concept requires landowners to tolerate a certain level of crop loss or inconvenience from wildlife. But if the public trust asks this of landowners, then we must not take their tolerance for granted. We need to recognize that landowners are a vital part of the public trust equation.

Acknowledging this in no way subverts the public trust or the North American Model of Wildlife Conservation, as some people claim. If anything, it strengthens both.

We cannot sustain the wildlife populations we've so long enjoyed without farmers and ranchers. We need their help maintaining wildlife connectivity and protecting habitat on their property. We need their support at the state capitol for wildlife-friendly policies and programs. We need their generosity to provide places to hunt for the majority of people who don't own land.

I constantly meet landowners who understand that wildlife diversity, including predators, is an essential element of the Montana landscape and a large part of what makes this state unique. They take pride in helping steward that wildlife. They recognize that hunting is part of our rich Montana heritage and accept the responsibility of allowing some access to the wildlife on their property.

NATE HOWARD

I want to make clear to all Montana landowners that we appreciate you, and we appreciate how hard it can be to have wildlife on your property.

FWP is charged with the stewardship of Montana's wildlife. We and the wildlife conservation community regularly ask landowners to listen to our concerns, and we'll continue to do so. But the road runs both ways. If we want ranchers and farmers to respect our perspective, we need to respect theirs in turn by putting ourselves in their boots and seeing the world—especially burgeoning wildlife populations—through their eyes.

—**Martha Williams**, Director, Montana Fish, Wildlife & Parks

TOMMY MARTINO

HABITAT GUARDIAN

LADD KNOTEK
FWP Fisheries Biologist, Missoula

ALL FWP FISHERIES BIOLOGISTS monitor native and sport fish populations, work to protect and restore aquatic habitat, conduct public outreach, and complete administrative tasks like stream permitting and fishing regulation revisions. What's great about working for FWP is that we're allowed to tailor the proportion of these responsibilities to our particular work area. That gives us the chance to be flexible and accomplish things that matter most for the residents and natural resources in each community.

When people think of a fish biologist, they might envision someone pulling nets from a reservoir or wading a stream with a backpack shocker, as shown in this picture. We definitely do those things, but we also conduct stream permit inspections and attend conservation district meetings. These administrative activities protect fisheries habitat, and it's some of the most important and lasting work we do.

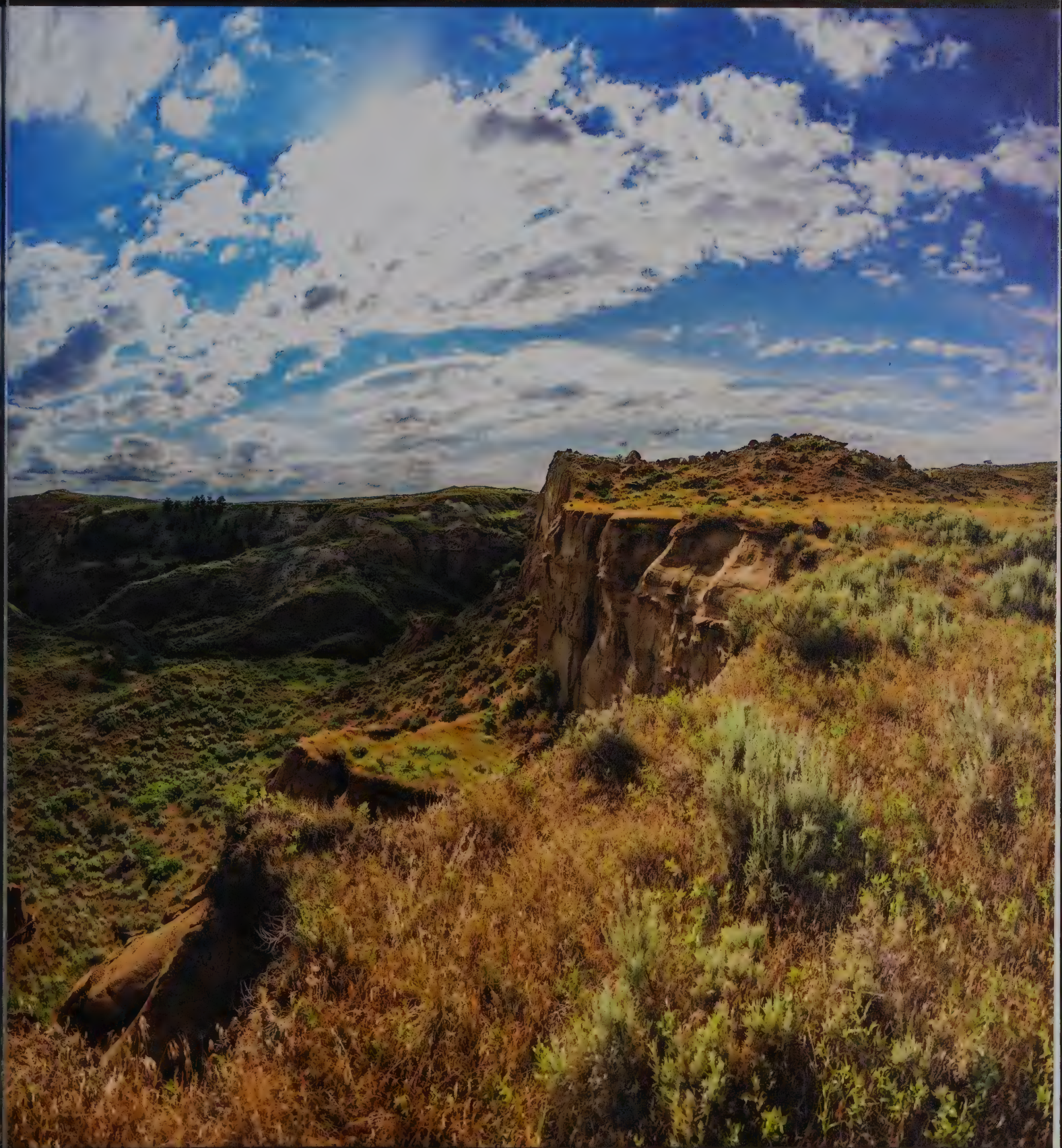
I work in Missoula and other parts of western Montana where there is a lot of construction, expanding development, and a rapidly growing human population. These pressures can threaten lakes, rivers, and streams. Thankfully, Montana has strong stream and aquatic resource protection laws like the 1975 Natural Streambed and Land Preservation Act (310 Law) and 1963 Stream Protection Act (124 Law). These provide legal tools used to balance development with resource protection and help lessen unintended damage to wild places and fisheries.

Although I enjoy working on the stream restoration and enhancement parts of my job, I actually accomplish far more for streams and fish populations by reviewing 310 and 124 stream permit applications and working with local conservation districts and floodplain administrators. Unfortunately, most of their work goes unnoticed. What they do is prevent bad things from happening to streams or lessen the damage that comes from development. That's something you can't see.

The next time you drive past the Blackfoot, Bitterroot, or other river or stream, bear in mind that one reason it looks so good and is producing so many fish is because of Montana's environmental protection laws and the people who administer them.

In the spring of 2019, **Jacelyn Bronte** of Bozeman spotted a pair of nesting sandhill cranes at a wetland just north of town. She visited the birds regularly for the next few weeks. After the pair hatched two eggs, Bronte says she spent "hours and hours" photographing the family from about 30 yards away with a 200–500 mm telephoto lens. Known as "colts," sandhill chicks often climb up onto a resting parent to stay warm in the feathers. "What I like about this shot is the relationship between the mom and the colt. It was just the second day after hatching, and already it could climb right up there," says Bronte, who works as a clinical psychologist when she's not photographing wildlife. Bronte lost track of the family after it moved to denser cattail stands to avoid dogs and walkers using a nearby trail. "But then a month later I heard from a *National Geographic* videographer who'd been filming them that both colts were still alive," she says. ■

"It's the end of the road in the most remote place you can imagine," says Glasgow photographer **Sean R. Heavey** of his photograph titled "Welcome to Bonetrail." Heavey visited the site, roughly 50 miles (as the crow flies) southwest of Glasgow, early last summer with *Glasgow Courier* editor A.J. Etherington (seen in the blue shirt along the right-hand bluff) in search of scenic vistas and story opportunities. "In western Montana, it's the mountains that are majestic, but here



in eastern Montana it's the way the sky interacts with the land that builds the majesty," Heavey says of the photograph. "What I also like about this image is how your eye goes through the opening in the bluff then drops down to discover the lake in the background, like it's a hidden gem. That's what Fort Peck is. It's not like Flathead or other lakes, where you can look at it from the highway. To see Fort Peck, you need to practically drive to the end of the earth." ■

1974

The year that Montana stopped stocking rivers and switched to wild trout management, the first state to do so.

Burn it where you buy it

Campers who transport firewood long distances could endanger Montana forests and urban trees, according to natural resources agencies. People who cut or gather firewood then take it with them when camping or traveling, especially across state lines, could introduce pine beetles, emerald ash borers, gypsy moths, and other harmful invasive insects to native trees that have no natural defenses.

For instance, emerald ash borers first showed up in North America in Michigan in 2002. The beetles have since spread to 35 states and five Canadian provinces in infested firewood, killing tens of millions of ash trees.

August Kramer, forest pest specialist for the Montana Department of Natural Resources and Conservation in Missoula, says the most important thing campers can do to prevent the spread of invasive insects is to purchase or gather firewood at or near where they plan to burn it, rather than transporting it from home.

"If buying firewood, make sure it's cut from Montana forests. Or gather firewood near your camping area if it's legal to do so," Kramer adds.

For additional information, visit **dontmovefirewood.org/**.

Now unprotected, temporary wetlands are critical for ducks and other wildlife.

HABITAT THREATS

EPA water ruling undermines wetland and stream protection

The Environmental Protection Agency (EPA) announced earlier this year that it had redefined which waters are eligible for protection under the Clean Water Act. The change leaves important fish and wildlife habitat vulnerable to pollution and significant harm, national conservation leaders say.

In a widely published op-ed, Chris Wood, president of Trout Unlimited; Collin O'Mara, president of the National Wildlife Federation; and Dale Hall, former director of the U.S. Fish & Wildlife Service, denounced the recent EPA decision as "ill informed" and "flat wrong on every level."

They say the new rule will leave roughly half of the nation's wetlands and almost one out of five of its stream miles without federal protection from pollution. In drier western states, as many as 90 percent of stream miles will lose pollution protections.

Agribusiness groups, fossil fuel producers, and real estate developers long opposed the Obama-era "Waters of the United States" (WOTUS) rules, claiming the rules shackled them with onerous and unnecessary burdens.

The EPA's replacement, called the "Navigable Waters Protection Rule," rolls back key portions of a 2015 rule that guaranteed protections (under the 1972 Clean Water Act) to certain wetlands and streams that flow intermittently or run temporarily underground. The new rule also relieves landowners of the need to seek certain permits.

"Research by Trout Unlimited suggests that more than 6 million miles of streams—half the total in the United States—will now be unprotected by the Clean Water Act, because they flow only after rainfall," wrote Wood, O'Mara, and Hall. "More than 42 million acres of wetlands—again, about half the country's total—will no longer be protected because they are not immediately adjacent to larger waters. In the Great Plains, the EPA will no longer conserve freshwater marshes known as prairie potholes that fill with water in the spring and provide critical, timely habitat for more than half of North America's migratory waterfowl," they added. ■

CLOCKWISE FROM TOP LEFT: CARTOON BY MIKE MORAN; SHUTTERSTOCK; MONTANA FWP

FISH APPRECIATION

New app answers "What fish is that?"

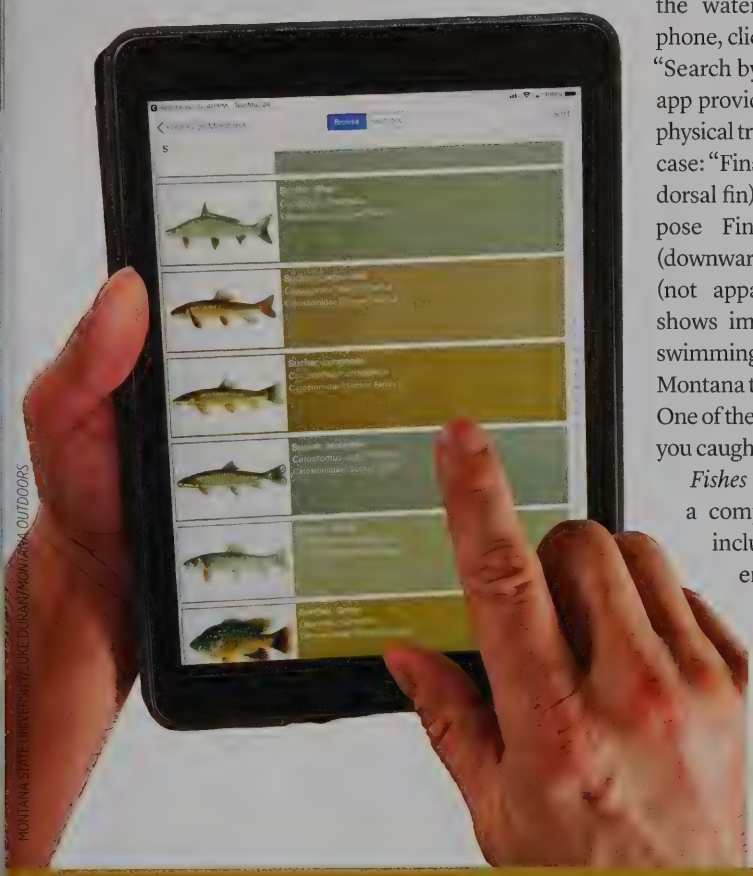
Most anglers can identify a handful of the 90 fish species swimming in Montana: rainbow trout, brown trout, mountain whitefish, walleye, yellow perch, goldeye, and maybe one of the state's two cutthroat trout species. But that's about it.

Very few can tell a carp from a carpsucker or a peamouth from a pikeminnow. That's changing fast, however.

Montana State University (MSU) recently released its *Fishes of Montana* app, which makes it easy for students, anglers, and others to identify species as soon as they are caught.

The app can be downloaded for free on Android and iOS handheld devices thanks to a $10,000 grant from Patagonia. Once downloaded, *Fishes of Montana* requires no cellular coverage or wireless connection.

Let's say you're fishing the lower Yellowstone River and land a slender, dark fish you can't identify. While allowing the fish to stay in the water, you take out your phone, click on the app, and go to "Search by Characteristics." The app provides options for various physical traits. In this hypothetical case: "Fins" (your fish has a single dorsal fin), "Tail" (forked), "Adipose Fin" (absent), "Mouth" (downward facing), and "Barbels" (not apparent). Now the app shows images of three species swimming in that part of eastern Montana that fit your description. One of them looks just like the fish you caught: a blue sucker. Voila!



MONTANA STATE UNIVERSITY/LUKE DURAN/MONTANA OUTDOORS

Fishes of Montana contains a complete species list that includes common and scientific names, and notes whether a species is native or introduced, and whether it is a threatened species or a game fish. The app also displays a glossary, maps of major drainages, diagrams of fish anatomy, and links to additional resources.

The app was produced by MSU researchers with technical assistance from Montana Fish, Wildlife & Parks field biologists. MountainWorks developed the app, and Conservation BenchMarks managed the project. Both companies are based in Bozeman.

Correct species identification is critical for fish conservation. For instance, anglers need to know the difference between brook trout and similar-looking young bull trout, a federally protected species. And between shovelnose sturgeon and pallid sturgeon, another protected fish. Harvest limits often differ between cutthroat trout and similar-looking rainbow trout, and between walleye and sauger.

> **"It's also just fun to know which species are swimming in the waters where you fish."**

"It's also just fun to know which species are swimming in the waters where you fish," says David Schmetterling, FWP Fisheries Research Program coordinator in Missoula.

For anglers who are unable to identify a species or want to share information, the app contains a direct email link to Schmetterling inviting them to attach photos. "What I especially like about the way *Fishes of Montana* was developed is how it promotes communication between the people using the app and those of us out here managing and conserving Montana's fisheries," he says. ■

PAPER LICENSES

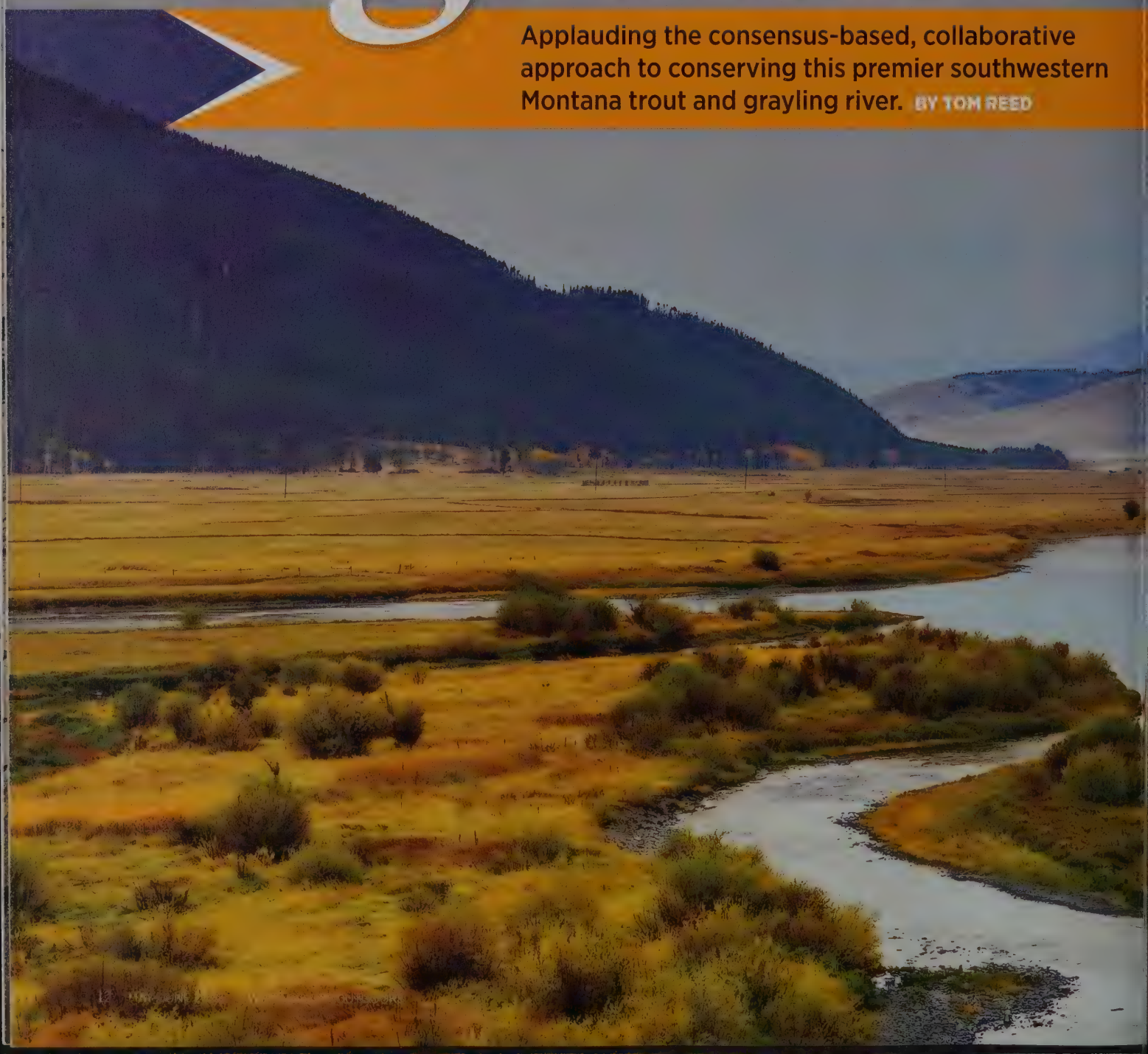
Starting in 2020, FWP switched to paper hunting and fishing licenses, permits, and carcass tags, replacing previous plastic-paper versions. Hunters and anglers can now print licenses that don't require tags from their home printers when they buy them online and can store those licenses on their smartphones. FWP mails out the carcass tags, which also are now printed on paper.

FWP made the switch so customers can obtain licenses at their convenience. Also, the thermal printers that produced the old plastic-paper licenses had become obsolete and were no longer able to print hot enough to secure lettering to the plastic.

To ensure that a paper carcass tag stays attached to an animal, hunters can place it in a Baggies-type bag (or laminate it) and then secure it as usual. ■

Give a Big Hand for the Big Hole

Applauding the consensus-based, collaborative approach to conserving this premier southwestern Montana trout and grayling river. BY TOM REED



STUNNING The Big Hole Valley is so vast and scenic that it's impossible to ignore, even in a state where picturesque rivers are commonplace. The upper section, shown here, is characterized by a sea of pasture and hay fields bisected by one of the world's most famous trout rivers.

PHOTO BY KEN TAKATA

Those who live among beauty too often grow oblivious to the loveliness around them. Here in Montana, it's common for residents to drive along any of the state's famous trout rivers on a late summer evening and forget to look up from the road and past a windshield splattered by the evening's hatch. The water and mountains become peripheral, like the walls of a personal tunnel.

But one river is impossible to unconsciously ignore: the Big Hole.

You don't "drive up" or "drive down" the Big Hole Valley as on most rivers. You come into it, much as you'd enter a vast theater surrounded by a gawk-worthy IMAX screen. The vistas are equally spectacular to the east, north, south, and west. No matter how, or how often, you encounter the Big Hole, you pay attention every time.

On a map, the Big Hole is that giant open spot in the middle of southwestern Montana, a huge valley surrounded by mountains through which the river flows north, then south, then north again. The Big Hole's puzzling name, hardly indicative of the breathtaking scenery, came from trappers who worked the West's vast rivers in search of beaver and called some of these big valleys "holes."

Though initially settled by rugged individualists, the Big Hole's sustained success as a world-class fishery surrounded by a thriving ranching economy is primarily the result of communal action. Big Hole ranchers, anglers, outfitters, and others often disagree. But as on the Blackfoot, Musselshell, Clark Fork, and other Montana rivers where diverse interests find common ground, they acknowledge that protecting the fishery and rural culture requires respecting each other's perspective and finding ways to work together. "What it ultimately boils down to is what those of us here call 'shared sacrifice, shared success,'" says Pedro Marques, executive director of the Big Hole Watershed Committee, a local conservation group.

"PLACE OF THE GROUND SQUIRRELS"

People have been visiting and living along the Big Hole River for thousands of years. There is no archaeological evidence that Indian tribes fished the river, but they certainly hunted bison, elk, and small game. For hundreds of years the Flathead, or Salish, occupied the valley, which they called *Iskumtselalik Pah* ("the place of ground squirrels").

Lewis and Clark and other European-Americans first reached the valley in the early 1800s, and a Mexican trapper named Emanuel Martin brought the first wagons there in the early 1850s. Miners found gold and silver in Big Hole headwaters and arrived in force during the 1860s and '70s. They built impressive stamp mills and smelters, road networks, and small communities like Glendale—now a ghost town just west of Melrose. Cattlemen came here too, first in the lower valley and then, attracted by a sea of wild hay, to the upper valley. Eventually, a handful of homesteaders braved the area's long and brutally cold winters and settled. Many modern-day ranching families are descendants of those tough and determined pioneers.

Today, the Big Hole River and surrounding high mountain valley appear and function much as they did in those early pioneer days, thanks in part to the area's remote location and two traditional ranching practices—beaver-slide haystacks and flood irrigation—still used in this "Valley of 10,000 Haystacks." Credit also goes to local and regional residents, anglers, and outfitters who take deep pride in the river itself. The Big Hole remains one of the most pristine trout rivers in the West and, coupled with an unforgettable panorama, among

EARLY HOMESTEADERS By 1914, when this photo was taken, families had established themselves in the upper Big Hole Valley, attracted by abundant water and vast tracts of wild hay.

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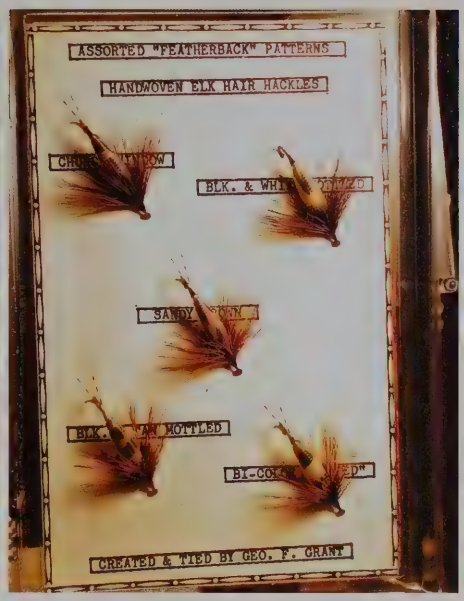
The author of Give Me Mountains for My Horses *and several other books, Tom Reed lives with his family on their ranch outside Pony.*



HAIL TO THE CHIEF No one was more central to Big Hole River conservation and fly-fishing than George Grant. The Butte native, born in 1906, advocated for the river throughout the 1970s with a newsletter he edited called the *River Rat*. The *River Rat* later became the official publication of Montana Trout Unlimited and helped raise public consciousness and support for water conservation issues on the Big Hole and other rivers. The "Chief Rat," as Grant called himself, was also an internationally known fly tier whose patterns combined woven-hair hackles with bodies of flat mono-nylon to replicate stonefly nymphs. The local Trout Unlimited chapter is named after Grant, who died in 2008.

the world's most famous.

Jim Olsen entered this storied landscape in 2008 as the Montana Fish, Wildlife & Parks fisheries biologist. "Honestly, I was a bit nervous about the whole prospect," Olsen says. "My first goal was simply not to screw anything up." This, after all, was the home water of angling and conservation legends like George Grant and Tony Schoonen, who spent their lives on the river, learning its mysteries and fighting to protect flows, water quality, and fish populations. Grant and Schoonen were conservation trailblazers who helped focus national attention from Trout Unlimited (TU) and other groups on the Big Hole and its tributaries.

Olsen says the Big Hole comprises three distinct sections as it flows roughly 115 miles from the Beaverhead Mountains southwest of Jackson to its confluence with the Ruby and Beaverhead Rivers near Twin Bridges to form the Jefferson. The upper river down to the Fish Trap Fishing Access Site is a mellow, high-meadow stream. Here anglers find brook trout, westslope cutthroats, and fluvial (river) Arctic grayling—a species once proposed for federal endangered species listing—and a few browns and rainbows. From Fish Trap past Divide to Melrose, the Big Hole speeds up, challenging floaters with large rapids and granite boulders beneath steep cliffs. "Rainbows and browns dominate the pocket water in this stretch," Olsen says. The final reach from Melrose to what locals call "Bridges" slows a bit as the river flows through semiarid canyons and past pivot irrigators watering fields of alfalfa. Olsen says this lower stretch contains miles of remote river without access and offers anglers their best chance of hooking a five-pound rainbow or brown: "People catch some monsters down there."

WAKE-UP CALL

The Big Hole has a long history of conservation activism. In the 1960s, local ranchers and anglers galvanized to oppose the Bureau of Reclamation's proposed Reichle Dam, which would have inundated 18 miles of river. Big Hole advocates, mostly anglers from Butte, also helped pass Montana's Stream Protection Act (1963), Natural Streambed and Land Preservation Act (1975), and Stream Access Law (1986).

A pivotal year for Big Hole conservation was 1988. As Yellowstone National Park burned during the long, hot summer, parts of the Big Hole went dry for nearly a month near the town of Wisdom. Grayling numbers, already dwindling from stream habitat degradation and low water throughout the 1980s, plummeted. In one stretch near Wisdom, grayling numbers per mile dropped from 111 to 22.

One reason for the river's chronic low flows was drought; the other was diversion of water to irrigate pasture and alfalfa. For ranchers like Randy Smith, the severe drought in 1988 and another in 1994 were a wake-up call. "We didn't want to be blamed for diverting all the water and killing

STEAKS AND SALMONIDS The main issue in the Big Hole Valley is water allocation. In years past, portions of the upper river and key spawning tributaries went completely dry.

TOP TO BOTTOM: BUTTE-SILVER BOW CHAMBER OF COMMERCE VISITOR CENTER; STEVEN AKRE

all the fish, particularly grayling," he says. Smith and other Big Hole ranchers decided to take steps to keep more water in the river. "We tried to come up with a plan to include other interests because there was a future in being able to talk about things and not piss each other off," Smith says.

The result was the Big Hole Watershed Committee (BHWC), which today includes ranchers, business owners, outfitters, county commissioners, water utilities, and trout anglers. With a paid staff of five, the BHWC (motto: "Conservation Through Consensus") coordinates restoration projects on headwater streams damaged by historic mining activity, works with the Montana Department of Environmental Quality on maintaining clean water, and monitors water flow and temperature.

The committee also maintains a phone-tree among ranchers who, when the river drops and warms in late summer and early fall, ask neighbors to use less water so fish can survive. New wells, drilled in part with federal conservation funds, provide stock tanks that keep cattle away from the river and tributaries, where they trample banks and eat shade-producing streamside vegetation. "Right from the start we decided to do things by consensus," Smith says. "We fashioned the process so if somebody had a problem with something, they needed to be part of the solution, too. The business of voting [with majority rule] and telling someone they lose just doesn't work."

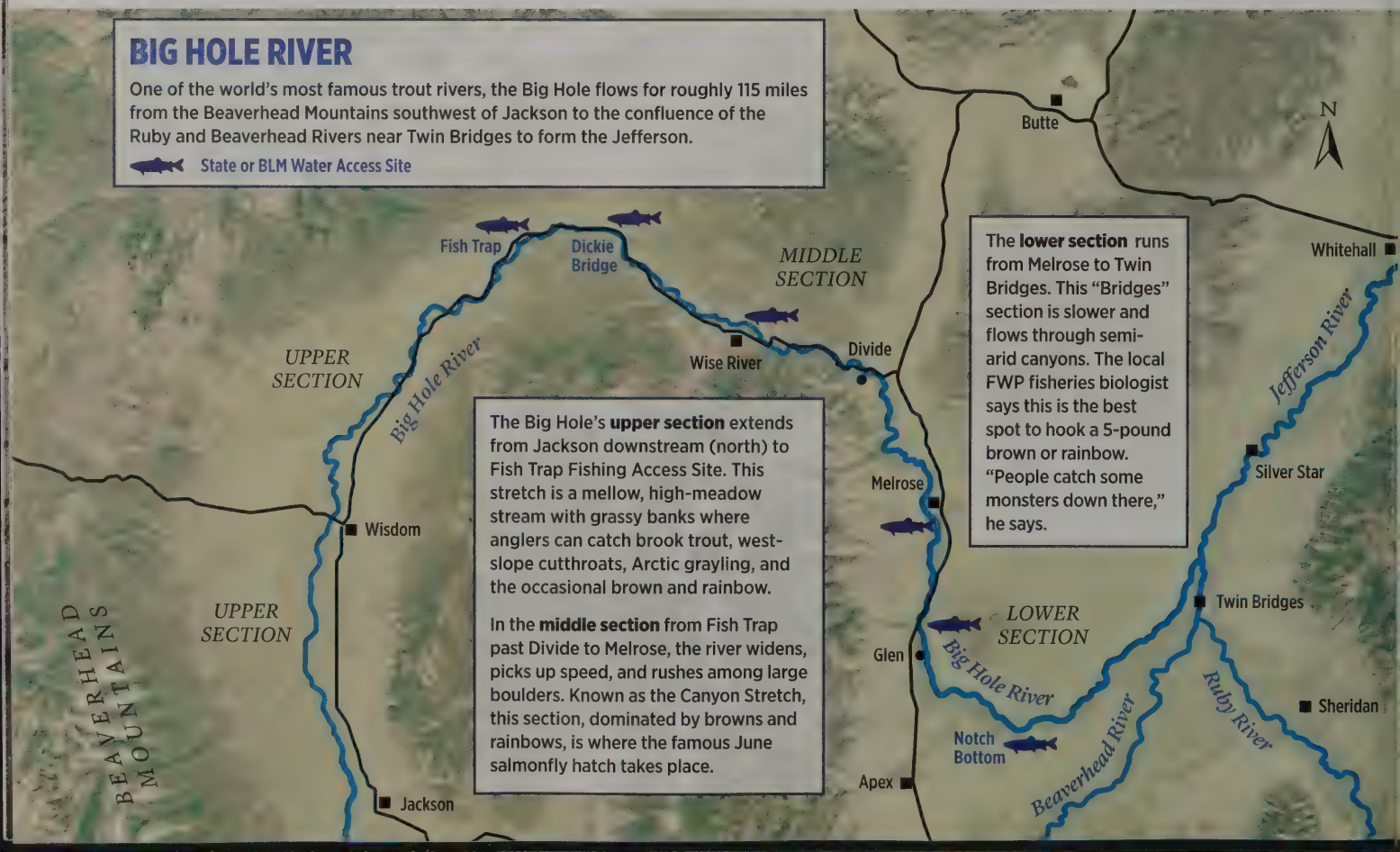
The "shared sacrifice" philosophy embraced by BHWC members has meant that while ranchers are asked to voluntarily reduce irrigation withdrawals during critical low-water periods, anglers and outfitters are required to reduce or even stop fishing. "Everyone works together and gives up something to benefit the river's fishery," Olsen says.

BALANCING ACT

While the watershed committee focuses on maintaining healthy river flows, Olsen figures out ways to keep both native and non-native salmonid species healthy and as abundant as possible. "Sometimes there's a conflict between the two, like when we have to remove non-native brook trout to restore westslope cutthroats in a tributary," Olsen says. "But that's only in a few streams." Most of the time FWP has been able to manage both the rainbows and browns that anglers prize as well as the cutthroats and grayling that the Montana legislature mandated the department protect so they don't become federally endangered.

The key to FWP's management is tracking fish populations, using electrofishing and surveys of angler catches. "Rainbow numbers have almost doubled in the last few years from Glen downstream to Twin Bridges," Olsen says. One reason may be the work FWP and cooperating landowners have done to boost water flows and restore spawning habitat on several Jefferson River tributaries. "We suspect that increasing numbers of rainbows are finding their way upriver from the Jeff to the Big Hole," Olsen says.

In cooperation with the BHWC, FWP crews also protect and restore Big Hole spawning tributaries, which produce all of the water and most of the fish in the main river. One ranch in the valley that modernized its irrigation system now uses just 3 cubic feet per second (cfs) of tributary


BIG HOLE RIVER
One of the world's most famous trout rivers, the Big Hole flows for roughly 115 miles from the Beaverhead Mountains southwest of Jackson to the confluence of the Ruby and Beaverhead Rivers near Twin Bridges to form the Jefferson.
State or BLM Water Access Site
N
Butte
Whitehall
Fish Trap
Dickie Bridge
MIDDLE SECTION
UPPER SECTION
Big Hole River
Wise River
Divide
Jefferson River
Silver Star
Melrose
Wisdom
UPPER SECTION
BEAVERHEAD MOUNTAINS
LOWER SECTION
Twin Bridges
Glen
Big Hole River
Ruby River
Sheridan
Notch Bottom
Beaverhead River
Apex
Jackson
The Big Hole's upper section extends from Jackson downstream (north) to Fish Trap Fishing Access Site. This stretch is a mellow, high-meadow stream with grassy banks where anglers can catch brook trout, westslope cutthroats, Arctic grayling, and the occasional brown and rainbow.
In the middle section from Fish Trap past Divide to Melrose, the river widens, picks up speed, and rushes among large boulders. Known as the Canyon Stretch, this section, dominated by browns and rainbows, is where the famous June salmonfly hatch takes place.
The lower section runs from Melrose to Twin Bridges. This "Bridges" section is slower and flows through semi-arid canyons. The local FWP fisheries biologist says this is the best spot to hook a 5-pound brown or rainbow. "People catch some monsters down there," he says.

DELICATE JEWEL The upper Big Hole holds the last population of fluvial (river-dwelling) Arctic grayling in the lower 48 states. Cooperative conservation agreements between the federal government and local landowners have kept enough water in the river to prevent extinction.

water instead of 15 cfs; the rest flows back to the Big Hole.

Another project restored a half-mile reach of French Creek. The project, championed by the Anaconda Sportsmen's Club, re-routed the stream away from an area prone to bank erosion to one with abundant streamside vegetation and little erosion. The restoration benefited not only grayling and westslope cutthroats but also wildlife like moose and elk.

For westslope cutthroats, which occupy less than 6 percent of their historic habitat in the drainage, Olsen has focused on restoring headwater streams and lakes mainly in surrounding national forests. "Our goal is to get them reestablished in about 20 percent of their historic habitat," he says. "We're finding that the cutthroats are becoming more popular with high-country anglers because they are generally bigger than brookies, and many anglers also like catching native fish in these small streams and headwater lakes."

> **"Overall, they've increased somewhat in abundance. Given that they are a fish that lives in streams running through private land, that's very encouraging."**

AVERTING DOOM

The biggest fisheries challenge for Olsen and other coldwater conservationists in the Big Hole watershed is protecting Arctic grayling. The upper Big Hole holds the last remaining fluvial (river-dwelling) grayling population in the lower 48 states. Despite work by the BHWC and others, the drought of the early 2000s appeared to doom the sail-finned salmonid. Then in 2006, Big Hole ranchers were given an opportunity to enter into federal Candidate Conservation Agreements with Assurances (CCAA) in partnership with the state of Montana and the U.S. Fish & Wildlife Service. In exchange for undertaking conservation measures, the agreements exempt landowners from several federal regulations in the future if grayling are listed as endangered. CCAA conservation measures include removing barriers blocking grayling migration, maintaining minimum river flows for fish survival, improving and protecting streamside habitat, and reducing the number of fish stranded in irrigation ditches, known as "entrainment."

Olsen says the CCAAs are helping stave off local grayling extinction, even in the face of warming temperatures due to climate change. "Overall, they've increased somewhat in abundance in the past few years," he says. "Given that they are a fish that lives almost exclusively in streams running through private land, that's very encouraging. It shows that fish conservation can be compatible with working landscapes." In 2014, thanks in large part to landowner participation in CCAA water-conservation practices, the federal

LEFT TO RIGHT: LUKE DURAN/*MONTANA OUTDOORS*; LISA BALLARD

RESTORED TRIBUTARY Above: On French Creek, a Big Hole River tributary, crews reconfigured 4,000 feet of stream channel away from an eroding hillside. They created new wetlands to store water and planted willows and other streamside vegetation that shades the water while providing browse for moose, elk, and other wildlife. Below: Landing a big rainbow near Wise River.

government deemed that listing the grayling was "not warranted," Olsen adds.

SHARED SACRIFICE

Cooperation has also helped anglers, outfitters, and FWP manage increased fishing pressure and user conflict. Fueled in part by the popularity of the movie *A River Runs Through It*, fishing pressure on the Big Hole grew rapidly throughout the 1990s. During the famous salmonfly hatch in June, boats would crowd productive stretches, fraying tempers and degrading the experience of local anglers. After listening to outfitters, resident anglers, and local businesses, the Montana Fish and Wildlife Commission restricted, on a rotating schedule, float fishing by nonresident anglers and outfitters on certain sections of the Big Hole.

"It's not perfect, but my dad was very much at the negotiating table, and he said, 'Yeah, we need to sacrifice, too, and rotate our boats around, rest the river, and close sections,'" says Wade Fellin, co-owner with his father of the Big Hole Lodge.

Eric Thorson, co-owner of the Sunrise Fly Shop in Melrose, echoes the theme of individual sacrifice for the greater good that characterizes the Big Hole community. "The way that outfitters work to spread out the pressure makes a big difference," Thorson says. "It takes a ton of coordination, but if that's what we need to do to keep this river as it is, we'll do it."

TOP TO BOTTOM: BIG HOLE WATERSHED COMMITTEE; WADE FELLIN

ALL TO THEMSELVES On a rare day when few other boats create competition, three anglers fish the Canyon Stretch below Divide for browns and rainbows. During April, May, and early June, the upper river fishes best. But as water temperatures rise, many fish begin moving downstream and concentrate in the middle and lower sections. During fall, many fish move back upstream.

Fishing the Bi

Some dedicated anglers are so desperate to fish the Big Hole they have been known to slide their boats over bankside ice as early as March, hoping to hit early hatches of *Skwala* stoneflies, midges, or *Baetis* mayflies.

As days lengthen and water levels rise, streamer fishing takes off. Eric Thorson, co-owner of the Sunrise Fly Shop in Melrose, likes to hit the upper river starting in April, fishing to the bank with streamers for big browns. He favors the Smoke 'N' Mirrors pattern tied by Dan Soltau of Dirty Water Fly Company. Traditional streamer patterns like Woolly Buggers work well, too, as longer daylight hours warm the water enough to wake up fish sluggish from winter's near-freezing temperatures. Current lines along banks, side channels, and soft water at the head and tail of boulders are all smart spots to toss and strip streamers.

Smoke 'N' Mirrors

Spring is also a good time to fish for grayling on the upper river, when the small

Hole through the Year

salmonids are often looking up for early season mayflies and caddis flies. Anglers can't go wrong using Adamses, PMDs or similar small dry flies.

The Mother's Day caddis hatch happens in early May, when size 14 Grannom caddis start coming off. The fishing can be just as good as the Big Hole's legendary salmonfly hatch, but with far less crowding.

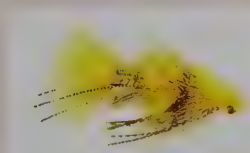
Sofa Pillow

That famous salmonfly action starts in late May or early June on the lower river and works its way up to Fish Trap Fishing Access Site above Wise River by late June. If you don't mind competing with flotillas of boats, Thorson says you can try to fool big browns and rainbows into attacking oversized salmonfly imitations like the Sofa Pillow. Start at the Glen Bridge and working your way upriver, day by day, as the hatch progresses upstream.

Salmonflies—two-inch stoneflies—live most of their lives among large boulders in fast-moving rivers like the Big Hole, Madison, and upper Yellowstone.

One way to beat the salmonfly hordes is to fish early (from dawn to 9 a.m.) or late (from 6 p.m. to sundown). The major hatch doesn't come off during those hours, but fish are often still looking up and will take a Chubby Chernobyl, Madam X, Kaufmann's Stimulator, or—a local fave—Cat Vomit dry fly flung toward the bank below overhanging willows. Yes, most fly patterns are named by men.

A popular combo fly that's deadly before and after the hatch is the Turd and a Worm: a Pat's Rubber Leg stonefly imitation with a San Juan Worm trailer.



Sex Dungeon

Jim Olsen, FWP fisheries manager for the Big Hole, likes fishing the Sex Dungeon, a massive five-inch articulated streamer in olive and yellow invented by Kelly Galloup, of Madison River fame. "My favorite thing about the fly is it has a bright head that I can see under the water," Olsen says. "So you get the heart-pounding thrill of seeing a brown trout come out from under a willow bush and chase after your fly."

Cat Vomit

Most anglers fish the Big Hole from boats, but the river definitely is wadeable in its upper reaches and near the bank farther down, where it can be accessed from FWP fishing access sites. The water can be swift and the rocks slippery, so consider using a wading staff and cleated wading boots.

After the salmonfly hatch tails off, so does some of the boat traffic. During July and August and into the fall, the middle and lower Big Hole produce steady hatches of other insects and dependable fishing for all species. Many trout from the upper river move downstream to the cooler water in late summer, increasing fish densities just as surface action on terrestrial insects like grasshoppers, ants, and beetles picks up. This is also when spruce moths, matched by a gray size 14 caddis (though hard to see, CDC caddis patterns are especially effective), start fluttering on the water surface.

Elk Hair Caddis

The tiny black-bodied Trico mayflies start coming off in mid-August and last through mid-September. Trout begin looking up to the surface starting at about 9 a.m., as the "spinners"—Tricos that died after mating in midair, not the bright-bladed lures—drop to the water surface. When fall arrives, anglers transition back to streamers for big browns, which go on a feeding binge when water temperatures cool.

Trico Spinner

Unlike the Missouri below Holter Dam and other tailwater fisheries, the Big Hole becomes too cold to fish in winter and freezes over except in a few major rapids. Consider winter a season that gives both fish and anglers a well-deserved couple of months rest.

CLOCKWISE FROM TOP LEFT: JASON SAVAGE; MONTANAFLYCOMPANY.COM; ORVIS.COM; COLORADO FLY FISHING REPORTS; FLYFISHUSA.COM; OUTDOORCANADA.COM; DIRTYWATERFLYCO.COM

CATFISH CRAZY

BY
ANDREW MCKEAN
PHOTOS BY
JOHN WARNER

FOR THE PAST 20 YEARS, **GLASGOW** HAS STAYED UP LATE THE FIRST SATURDAY IN JUNE TO CELEBRATE THE **CATFISH CLASSIC** AND THE MILK RIVER'S REMARKABLE CHANNEL CAT FISHERY.

Tyler George checks his stopwatch. In eight more minutes he'll reel in his line, run 100 yards downstream, and flip his bait into the next hole, a spot no larger than a sectional sofa, where a submerged cottonwood tree temporarily quickens the Milk River.

"You soaking shrimp?" Tyler yells upstream to his brother, Ryan George, who shouts back his confirmation.

In their pickup, parked above the river next to an alfalfa field, the brothers have a cooler also stocked with cut-up goldeye, a jar of leopard frogs, a bag of chicken livers, and a secret bait Tyler won't reveal to me. "Great!" Tyler yells back, checking the stopwatch. "You've got 2 minutes, 20 seconds to your next hole!"

During this riverside quarterbacking, Tyler never takes his eye off the tip of his rod, which pulses rhythmically as the current pulls on his submerged bait and lead weight. Wearing a Montana Catfish Association (MCA) shirt, camouflage pants, and Muck boots, he crouches on the muddy bank of the Milk River, ready to grab his rod the instant it registers a bite.

The George brothers are one of 80 teams in the Catfish Classic fishing tournament, and they need a few big fish to have a shot at winning the event, as they did in 2015 and 2016. Their strategy, Tyler says, is to "hole-hop," spending a defined amount of time (confirmed by the stopwatch) at each of a dozen spots that hold the promise of a five-pound or larger channel catfish.

HOME HOLES

The brothers grew up in Glasgow. While Tyler now teaches middle school in Sheridan, Wyoming, and Ryan works for Burlington Northern Santa Fe railroad outside Billings, they return to their hometown every June to fish the Classic, and the river of their youth.

"We both went to college in Missoula, and fished trout on the Clark Fork and Bitterroot

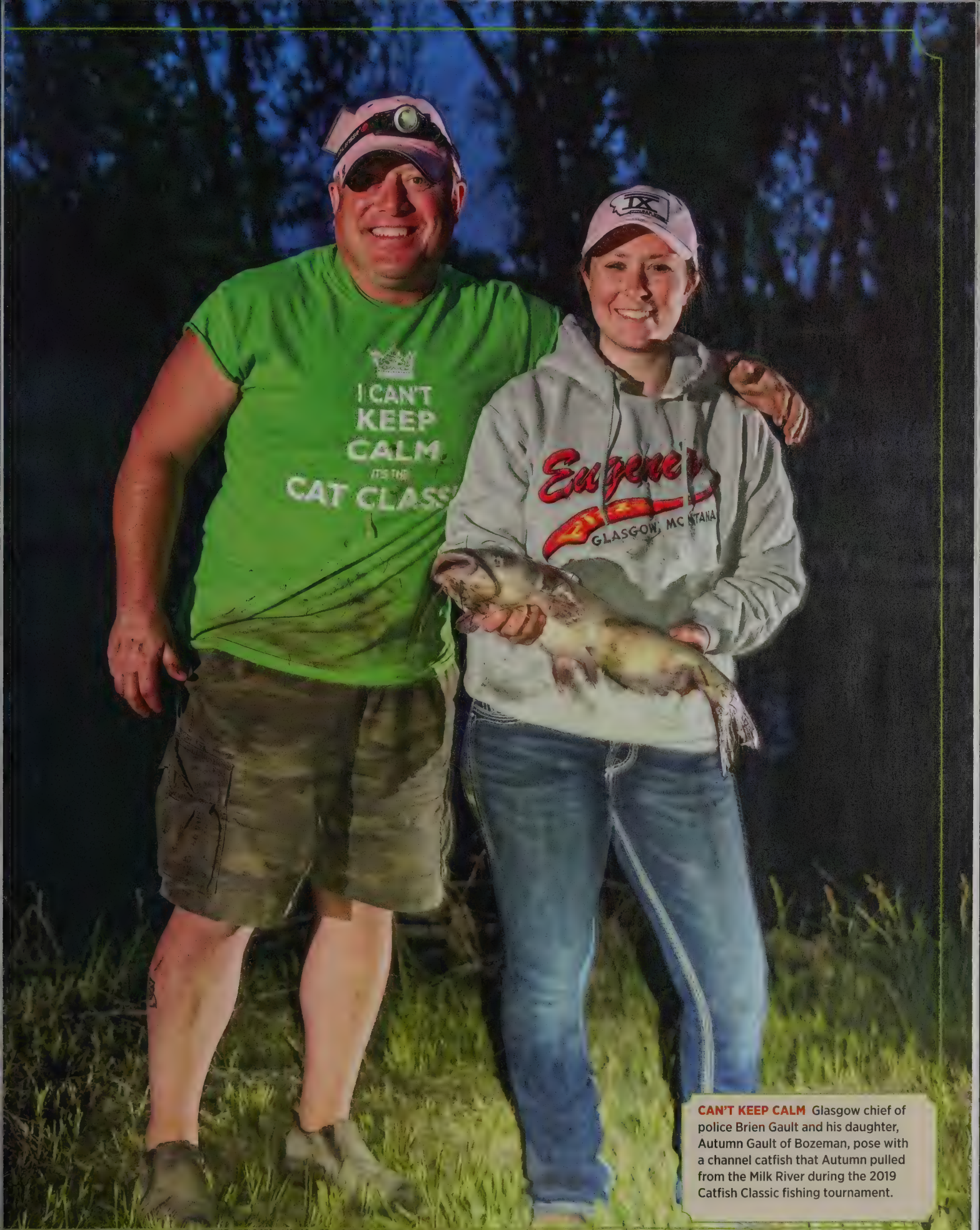
> "The fishing turns on when the lights go out!"

every chance we had," Tyler says. "The hydrology of a river is the same, no matter if it's a clear-water trout stream or a catfish river. Riffle, run, hole. We hit the holes, but only if they have tasty riffles and runs above them."

The Georges aim to finish this evening in a series of what they call "home holes," broad bends of the muddy river behind their late grandfather's farm just outside Glasgow. That's where Tyler caught his biggest Milk River channel cat, a fish weighing nearly 12 pounds, back when he was in junior high. That fish, plus the promise of others like it, galvanized his interest in catfishing and learning the Milk River, which typically has a barely perceptible current as it bends and twists back on itself. During high water, though, the Milk churns and claws at its gumbo banks with ferocity, tipping cottonwoods into the current and flooding riverside alfalfa fields. In all seasons, it's home to channel catfish, a native species found throughout the lower Missouri River, Yellowstone River, and their tributaries.

Tonight, as the light lingers long into the lazy June evening, the Milk is relatively tame, making it fishable for the Georges and 79 other teams spread up and down the river hoping for a double-digit fish that would put them in the money. The tournament ends at midnight, when all teams present their five-fish "basket" at the weigh-in downtown. The heaviest basket of the tournament wins $2,000, but even runners-up win cash, fishing rods, and jackets sporting the MCA logo—a surly channel cat swimming through the outline of the state—embroidered on the back. The evening's single biggest catfish wins the lucky angler $200.

About half the teams in the Classic use boats small enough to navigate the Milk's tight turns and shallow stretches. The rest fish from the bank, spending their entire evening on one stretch of river or hopping from one spot to the next.



CAN'T KEEP CALM Glasgow chief of police Brien Gault and his daughter, Autumn Gault of Bozeman, pose with a channel catfish that Autumn pulled from the Milk River during the 2019 Catfish Classic fishing tournament.

"We're hard core, from the shore!" Tyler George shouts after me as I leave the brothers' spot to check on other anglers.

CATFISH CARNIVAL

First, though, I swing through downtown Glasgow. It's still eight hours until the raucous traditional midnight weigh-in, but already spectators have begun gathering in front of a stage set up in the empty lot across from D&G Sports & Western. Country western music plays from speakers under party lights strung between poles. Spectators line up at food trucks for tacos and cold beer, awaiting reports from the river. Last night, a street dance kept the bars hopping. The downtown party—Glasgow's biggest of the year—continued earlier this morning with a pancake breakfast, kids' carnival, cornhole tournament, and 5k fun run. Some Montana towns have their summer rodeos, others sponsor art fairs. Glasgow turns out for the Cat Classic, which celebrated its 20th anniversary in 2019.

The native channel catfish is an unlikely celebrity in a state renowned for its cold-water trout and world-class walleye fishing. Some people think of these larger cousins to the bullhead as "trash fish," apparently because they feed along the bottom of warm, turbid waters flowing through the state's eastern prairies.

It's an uninformed opinion. Catfish are a popular food fish across the United States. And when hooked, their deeply forked tail allows them to power hard against even the stoutest spinning rod.

For more than a dozen years, the MCA has elevated the reputation of channel cats by holding summertime catch-and-release fishing tournaments on the lower Yellowstone and Missouri Rivers. The Super Bowl of the MCA circuit is the Milk River Catfish Classic, and there's no more enthusiastic booster than Brenner Flaten, founder of the tournament and the evening's emcee. "The Classic has become a community fixture," says Flaten, vice principal at Glasgow's elementary school and the Glasgow Scotties' athletic director. "It's not uncommon to have 300 people come out at midnight in downtown Glasgow for the weigh-in."

> "Do we have a strategy? Sure. Have fun and hopefully catch some fish."

They turn out to see fish, of course, but also for the spectacle that's grown up around

Outdoor Life *hunting editor and longtime* Montana Outdoors *contributor Andrew McKean lives on a small ranch outside Glasgow. John Warner is a photojournalist in Billings.*

SOCIAL HUB Still eight hours before the midnight weigh-in, spectators begin gathering near the stage set up in downtown Glasgow across from D&G Sports & Western. Though catfishing is the carnival's main draw, many spectators come as much for the food, music, and summer socializing.

the tournament. Flaten struts across the stage like a televangelist, delivering hyperbolic commentary about each team's strategy, the fishing conditions, and testimony to the religion of catch-and-release catfishing. Dry-ice fog rolls off the stage, speakers boom, and colored lights give downtown the feel of a dust-country revival. "The fishing turns on when the lights go out!" Flaten bellows to the growing crowd.

In the early years of the Classic, Flaten's stage was the bed of a pickup parked at the Glasgow Civic Center, and the winning basket of channel cats weighed less than 20 pounds. Now, the 80-team field fills in a couple of days, and the winning basket routinely weighs 35 pounds or more.

Tyler Haddix, Montana Fish, Wildlife & Parks fisheries biologist in Glasgow and a big channel cat fan himself, appreciates how the tournament highlights the often-disparaged species. "Being so close to Fort Peck Reservoir, walleye is usually king around here, but not this weekend," he says.

Flaten attributes the tournament's success to increasingly better fishing, which he and Haddix believe is the result of 12 years of relatively high water in the Milk. The river heads in Glacier National Park, flows into Alberta before reentering the United States northwest of Havre, then hugs the Hi-Line through Glasgow until joining the Missouri below Fort Peck Dam about 20 miles downstream. "The Milk is the northwesternmost native catfish river in the United States," says Flaten. Like the George brothers and many of the tournament's other top anglers, he was a decorated prep wrestler at Glasgow High School. Catfish are pugnacious, hardy, and durable, not unlike the smash-mouth grapplers who fish for them.

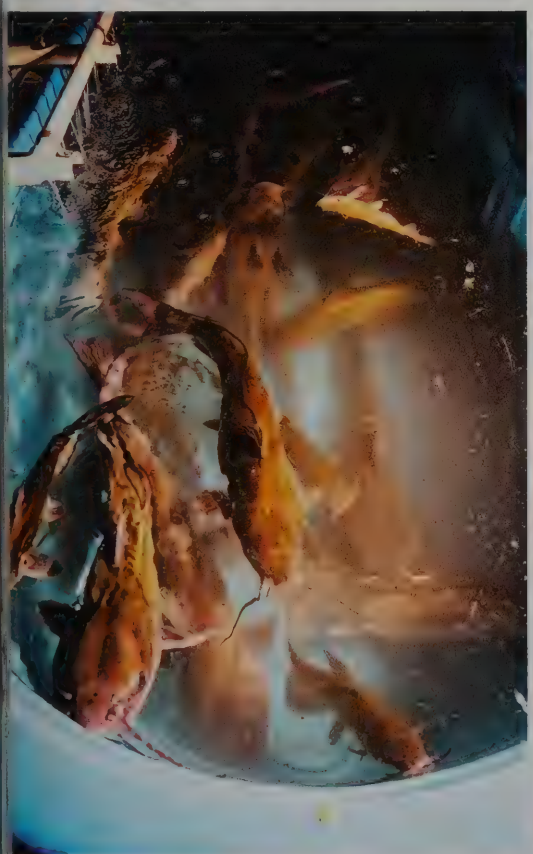
Flaten says that Milk River fishing, for channel cats and the dozen or so other game and nongame species—including shovelnose sturgeon, sauger, walleye, and blue suckers—has never been better. "There were summers when I was a kid when the Milk didn't flow," he says. "We'd catch the occasional three- to four-pound cat, and a six-pounder was considered a monster, but the average fish was a little over a pound. Now, the average Milk River cat is around 2½ pounds and a 10-pounder is considered a trophy. We've also seen the number of fish you can expect to catch in a night double over the past 15 years."

GOTTA HAVE SHRIMP

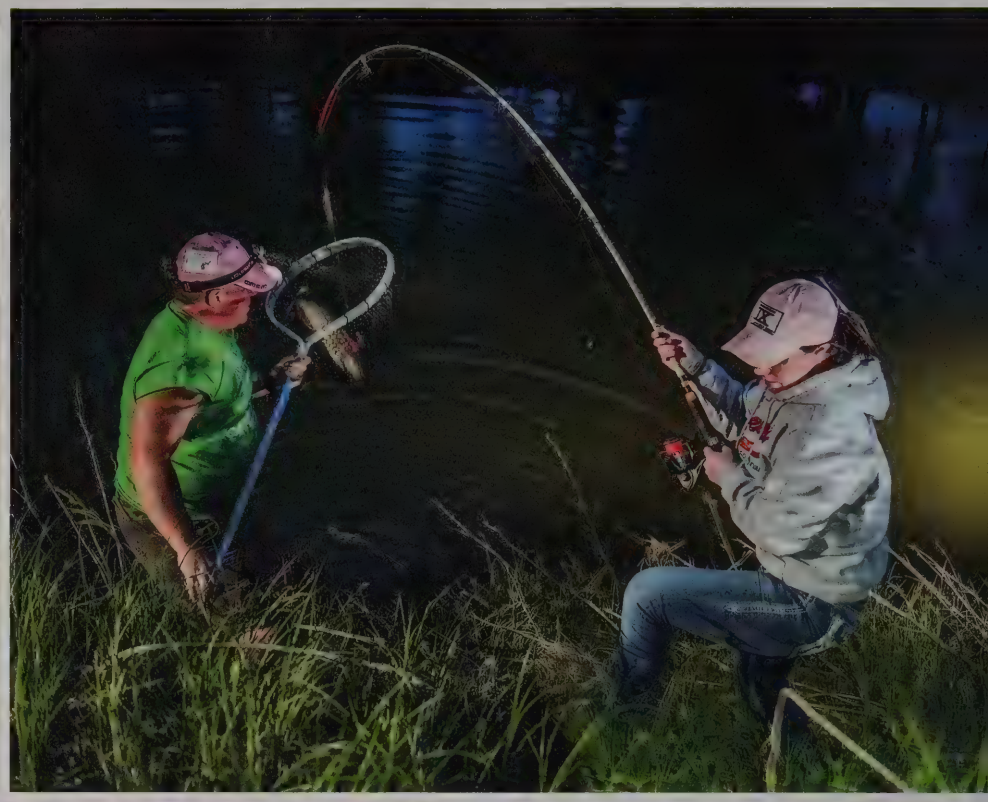
A few miles downstream from Glasgow, as the summer sun slips below the cottonwoods, Brien Gault straps on a headlamp, pounds a rod holder into the bank, and checks the cooler next to his lawn chair. Both bait and drinks are cooling on ice. Gault, Glasgow's police chief, looks down the bank to his daughter, Autumn, who's come home from college in Bozeman to fish the Classic with her dad.

"You got shrimp on?"

Autumn nods. She tells me that they almost didn't bring shrimp, but then ran into



READY FOR RETURN Above left: All channel catfish caught during the tournament are kept in an oxygenated tank for later live release back into the Milk River. Above right: Five-time Cat Classic champion Nate Molstad of Havre carries his team's catch to the weigh-in stage.



BRAGGING RIGHTS

The team of Steve Harris Jr. (Sidney) and Steve Lowrey (Fairview)—struggling to hold their slippery catch on the weigh-in stage in the photo to the right—won the 2019 Catfish Classic with a five-fish basket of 36.42 pounds. Carter Pederson's (Wolf Point) 11.12-pounder was the largest fish of the tournament. Brothers Tyler and Ryan George came in 24th with a combined catch of 21.74 pounds, while the Gaults placed 47th with a basket of 16.9 pounds. The 2020 Milk River Catfish Classic is scheduled to take place June 6. For more information, visit montanacats.com.

THE BIG NIGHT Clockwise from top left: Two-time Cat Classic champion Tyler George sets his rod after a catfish takes his bait; Brien Gault nets a nice catfish caught by his daughter, Autumn; 2019 tournament runners-up Peyton Pederson of Billings and her brother Carter Pederson of Wolf Point display their two largest catfish to a cheering crowd; Jake Aune and Shawn Wersal, both of Glasgow, show off their night's catch; early leader Jake Knaff awaits other teams' official weights while his tired son sits on the lap of the Glasgow Chamber of Commerce mascot, Catfish Charlie.

the George brothers at the grocery store earlier in the day.

"We didn't want to be obvious about it, but we checked out their cart, and they had frozen shrimp, so we went back and bought the store out," Brien says. "If the Georges have it, it's got to be working."

Autumn checks the silver bell attached to the tip of a rod 20 yards upstream from her chair. The bell will sound when the rod jiggles, signaling a bite, giving her time to run up the bank in the dark and set the hook.

For the past 10 years the Gaults have fished this stretch of river, 50 yards of grassy bank on a friend's farm that Brien mows like a golf green the week before the tournament. They've cracked the top 20 teams twice, but Brien says that's not really the point. "This is our weekend," he says. "Neither of us fish much the rest of the year, but we entered the Classic one year and had so much fun that we just kept doing it. Do we have a strategy? Sure. Have fun and hopefully catch some fish."

Some years the mosquitoes drove them to town early; other times the river's rainslick banks made it hard to move, even in mud boots. Last year, it was the bats. "They were so bad they knocked my headlamp off if I stood up," says Brien. "And they hit our line so often that our bells were going off pretty much constantly."

"It was miserable," says Autumn, adding, "but tonight's almost perfect."

BRONZE MEDALISTS Above: Defending champions Cole Plouffe of Glendive and Nevadan Jason Flaten finished third in the 2019 tournament.

The Milk River Catfish Fishery

The lower Milk River is packed with 1- to 3-pound channel catfish, but environmental conditions prevent the fishery from producing many larger cats like the ones anglers pick up in the Musselshell or Missouri. "Big fish come up those rivers from Fort Peck Reservoir, where they beef up on abundant forage fish like river carpsuckers, smallmouth and bigmouth buffalo, blue suckers, and shiners," says Tyler Haddix, FWP fisheries biologist in Glasgow. "There's not that forage base in the Milk to grow many catfish over 10 pounds. "

CRAIG & LIZ LARCOM

Catfish are named for their whiskerlike barbels, which are sensory organs used to smell food.

Some anglers have called on FWP to lower the Milk River catfish possession limit from 10 daily and 20 in possession, hoping to increase fish size. But Haddix, who notes that the daily limit was already lowered from 20 to 10 in 2010, says there's not enough fishing pressure on the river to justify a further reduction. "This isn't like Nebraska or Arkansas, where catfish get hammered every day and harvest adjustments can make a difference," he says. Though FWP isn't opposed to exploring harvest limit changes on more heavily fished catfish fisheries, "a lower limit on the Milk would simply deny the handful of harvest-oriented anglers opportunities to take home fish," Haddix says. In fact, what would actually help boost average catfish size on the Milk is *increased* harvest. "The Milk is loaded with small catfish. If we could remove more of those, that would free up food to grow larger cats," Haddix says.

Limits aside, FWP and tournament anglers agree that the fishery benefits from high water. "Everyone recognizes those flows flush silt out of spawning gravel for forage species, increasing reproduction, and providing more fish habitat overall," Haddix says.

Steve Dalbey, FWP regional fisheries manager in Glasgow, says what would most benefit the catfish and other fish populations in the Milk and lower Missouri Rivers would be if Fort Peck Dam began releasing water in ways that mimic historic flows before the dam was built in the 1930s. "Warm-water releases and periodic spring pulses from Fort Peck Dam would benefit catfish and their forage in the Milk River and the nearly 200 miles of the Missouri that have been severely disrupted by the dam," he says.

—Tom Dickson, Editor

Has Catch-and-Release Gone Overboard?

The case for harvesting trout

By Tom Dickson

TOM DICKSON/*MONTANA OUTDOORS*

The fish leapt, made a strong run upstream, leapt again, then finally submitted as I led it into the shallows next to an island on the Missouri River upstream from Craig. Kneeling in the water, I cradled the trout in my hands and slipped the hook free. Then, looking to make sure no one was watching, I bashed the 19-inch rainbow in the head with a softball-size rock.

Killing that big, beautiful fish was perfectly legal and biologically justifiable. But to a growing number of anglers, what I'd done ought to be a hangin' offense.

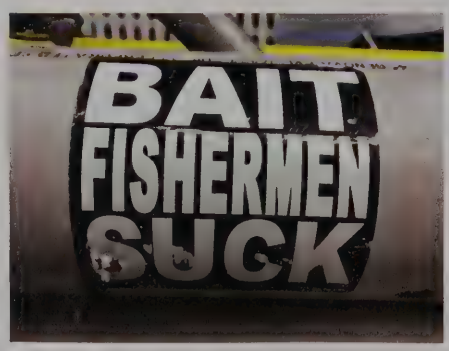
Which is why I was taking pains not to be seen. Game wardens weren't the concern; I was well within the legal limit. What I dreaded was another angler drifting past and chewing me out for doing something that to many seems downright barbaric these days: taking a trout home to eat.

"More and more we're seeing bait fishing and trout harvest pushed underground. People are now embarrassed to admit they are keeping fish," says Eric Roberts, Fisheries Management Bureau chief with Montana Fish, Wildlife & Parks.

"Bait Fishermen Suck" stickers on fly-fishing boats don't help. And heaven help the naïve angler who shows a stringer on social media. "It's reached a point on Facebook that if you post a shot of yourself holding a big fish and don't tag it with 'Still Swimming' or 'CPR' [Catch, Photo, Release], you'll get lambasted in the comments section," says Zack Shattuck, FWP Native Species Program coordinator.

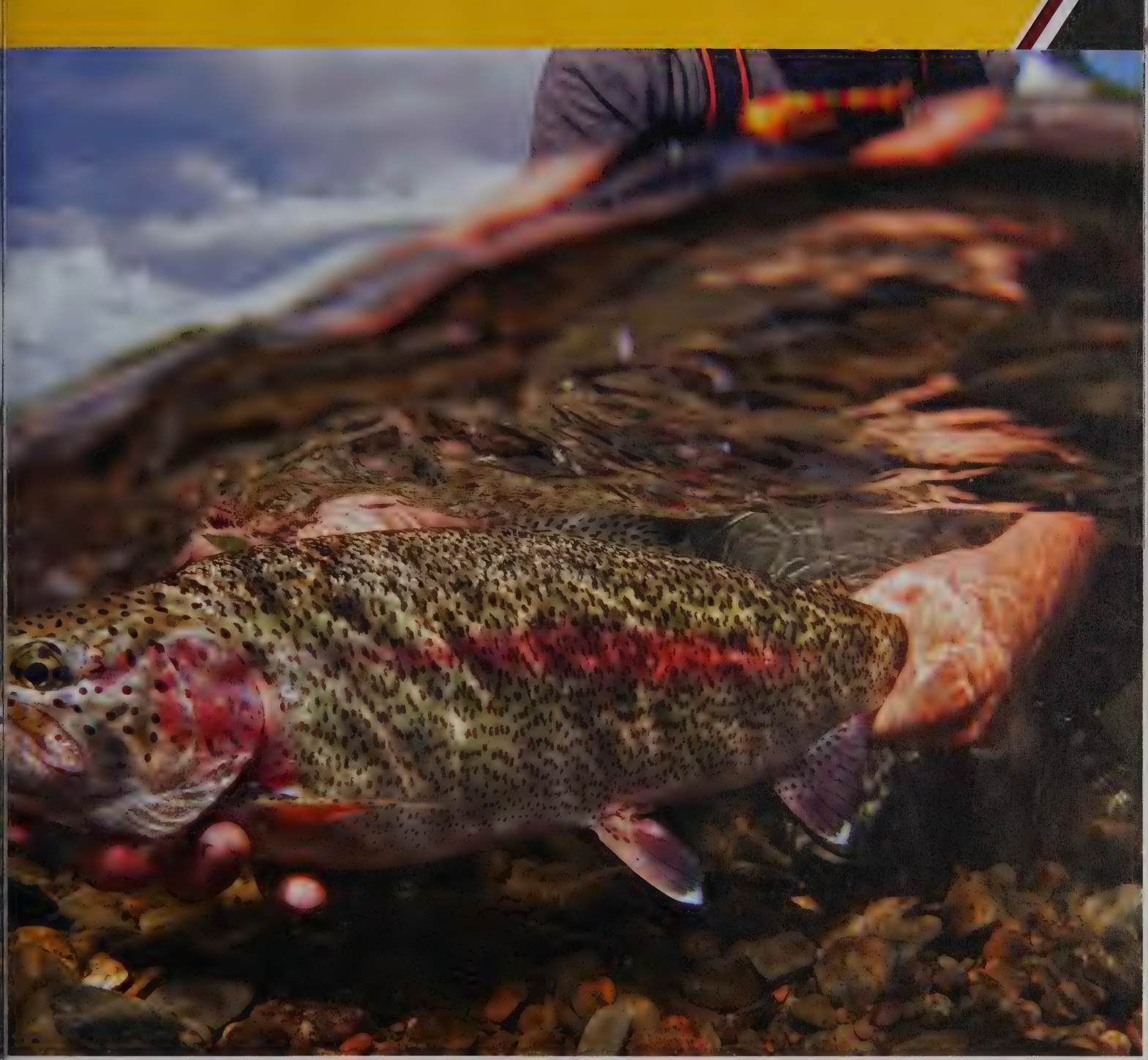
But is being sautéed in butter really the worst fate to befall a fish? I'm not the only one wondering whether the catch-and-release ethic, even with all its accomplishments, has gone too far. "One question I constantly get at social gatherings is what's my take on catch-and-release," Shattuck says. "Older anglers especially, who've fought for stream protection and public access and consider themselves conservationists, are basically asking me if it's still okay to kill a fish."

NOT WELCOME A sticker on a fishing raft in Helena sums up attitudes of a growing number of fly anglers toward those who harvest fish.



10 pounds plus one fish

It certainly has been for most of human history. Though fishing has always included some aspects of sport, relaxation, and nature appreciation, its main purpose during the past 40,000 years has been to get food.



BEST MANAGEMENT PRACTICE? The act of releasing trout has become sanctified throughout most of the United States and Canada. But fisheries biologists warn that the practice isn't all it's cracked up to be. "In many cases," says Eric Roberts, chief of the FWP Fisheries Management Bureau, "some of our trout fisheries would actually be better off with *more* harvest."

PAT CLAYTON/ENGBRETSON UNDERWATER PHOTOGRAPHY

That started changing after World War II, as income levels rose and fewer Americans needed fish to supplement their larders. Around the same time, anglers began to notice that fish populations were finite and that liberal harvest regulations, like the "10 pounds plus one fish" daily limit allowed on the Big Hole and other rivers until the mid-1960s, were depleting fisheries.

The idea of releasing fish was first widely promoted by fly angler and author Lee Wulff, who wrote in the late 1930s (about Atlantic salmon), "A good game fish is too valuable to be caught only once." The practice of releasing fish to be caught another day slowly took off among trout anglers. Among the first Montana advocates was Don Martinez, a renowned West Yellowstone fly shop owner who, starting in the 1940s, began urging clients to let trout go. "Some of the best fishermen do not carry a basket or a net, releasing all of their catch

> **"I know they mean well, but fly anglers who scorn spin and bait anglers are just driving people away from fishing altogether."**

SUCCESS STORIES Controversial at first, the idea of releasing fish began with Atlantic salmon and spread to largemouth bass and trout as anglers saw that fisheries across the United States were being overharvested. The practice was especially successful with Yellowstone (above) and westslope cutthroat trout, which readily take flies and lures and can be easily overharvested.

except for an occasional very large specimen," he wrote in his shop newsletter. Elsewhere, catch-and-release took off with largemouth bass anglers beginning in the 1970s. By the 2000s it was even being embraced by some anglers who fished for walleye and catfish, long considered food fish species. "Let 'em go, let 'em grow" became the mantra of anglers everywhere.

Mostly it worked. Even after Montana switched from stocking rivers to managing for wild trout in the 1970s, the growing catch-and-release ethic helped conserve populations and maintain catch rates in the face of ever-increasing fishing pressure. That's still the case. On crowded rivers especially, trout fisheries would be quickly depleted if every angler kept even one fish per outing. "It's been vital for westslope cutthroat trout, which are gullible and can easily be overharvested," says David Schmetterling, FWP Fisheries Research Program coordinator. For instance, FWP recently enacted a new regulation banning treble hooks on all three forks of the Flathead River to make it easier to release trout to protect low-density cutthroat populations.

But over the past two decades, something unexpected has happened, causing fisheries managers to reconsider whether releasing fish is all it's cracked up to be. "In many cases, we've reached a point where some of our trout fisheries would actually be better off with *more* harvest," Roberts says.

Increase harvest, increase size

Every river, stream, lake, or reservoir has a limited amount of food that can support a finite poundage of fish, known as its biological "carrying capacity." Let's say a theoretical river can grow 1,000 pounds of trout per mile. In most cases, that population could be represented by a pyramid, with large numbers of small trout, far fewer medium-sized trout, and relatively few large trout. If anglers want to catch more large trout in this river, they'd need to kill ("harvest") many of the small trout at the base of the pyramid to free up food and space for the remaining fish to grow. "Those smaller two- and three-year-old trout feed like crazy and are far more aggressive than big trout," Roberts says.

> **"Catch-and-release has become so ingrained that we've lost our main tool for managing species composition, size structure, and population size."**

In many waters where a trout population is at carrying capacity and few anglers keep fish anymore, the lack of harvest can actually reduce average trout size. That's not true everywhere—the Missouri River below Holter Dam, for instance—but many fisheries could produce larger fish, though fewer fish overall, if anglers brought more small trout home to eat. "For a generation we have been convinced that catch-and-release is conservation, but that's not necessarily the case these days," Schmetterling says.

Tom Dickson is editor of Montana Outdoors.

LEFT TO RIGHT: PATRICK CLAYTON/ENGBRETSON UNDERWATER PHOTOGRAPHY; RICK CLARK; ALLEN HAY

"As long as the habitat is in good shape and a fishery isn't being overharvested, all catch-and-release does in most cases is reconfigure the sizes of fish in a given population."

One example was the Bighorn River in the early 2000s, when anglers hooked abundant 13- to 15-inch browns and rainbows but rarely caught larger trout. "We don't know for sure, but likely the best way for them to have seen more 16-plus-inch fish would have been to harvest more trout below 13 inches, but that wasn't happening," Schmetterling says.

On the Beaverhead River, Dillon-based fisheries biologist Matt Jaeger says that during some years he could double or triple the number of 18-plus-inch trout per mile on the Clark Canyon Reservoir tailwater fishery. But that would take convincing unwilling anglers to harvest thousands of 10- to 16-inchers. "They understand the science but aren't comfortable harvesting fish," Jaeger says. "Some have told me privately they'd prefer us to go in and electroshock those smaller fish and remove them ourselves."

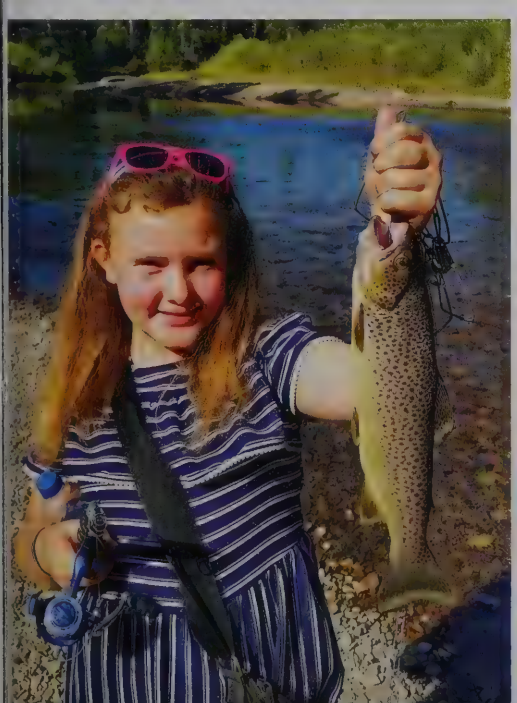
In particular, biologists say they are frustrated they can't convince anglers to harvest brook trout, browns, and rainbows to help protect westslope cutthroat trout, a species so vulnerable it has repeatedly been proposed for listing under the Endangered Species Act. Brookies and browns outcompete cutthroats, and rainbows hybridize with the native species, diluting genetics. "Catch-and-release has become so ingrained in angler behavior that we've lost our main tool for managing species composition, size structure, and population size," Schmetterling says.

BELLY UP? Most released fish live to fight another day. But roughly 8 percent of the trout that anglers catch and then release die from the stress of the fight and overhandling. Rates are even higher in late summer when water temperatures become dangerously warm.

What's the harm?

Ironically, many fish that catch-and-release absolutists believe they are saving end up floating belly up downstream after release. FWP biologists estimate that this "incidental mortality"—caused by the stress of the fight or mishandling—accounts for an average of 8 percent of all released fish, depending mainly on water temperatures. "When temperatures are at lethal levels of over 72 degrees in July and August, fish caught and released are essentially dead," says Roberts.

Mortality rates increase every time a fish is captured. On the Madison River, each rainbow trout is caught an average of 4.5 times. Though the vast majority of released fish survive to fight another day, FWP biologists estimate that roughly 32,000 released rainbows die each year on that river alone. "Anglers can do a lot to increase survival, like playing a fish quickly and not to exhaustion, and reducing the time they handle the fish, especially out of the water," Schmetterling says. "But the number one thing they can do is to not fish for trout when water is above 70 degrees."



PROUD HARVEST Once common throughout Montana, the practice of keeping a few fish to bring home for supper has been pushed underground. FWP officials say some anglers have publicly shamed others for keeping trout.

Another misconception is that big trout need to be released so they can "fight another day." "Every spring, we hear from anglers complaining about the 'slaughter' of big rainbows coming near shore on Helena-area reservoirs," says Adam Strainer, FWP biologist in Helena. "But those fish—like most big trout in other Montana reservoirs and rivers—are at the end of their life span. If released, they'd probably die before ever getting caught again."

Besides, "these are stocked fish that are meant to be harvested," Strainer adds.

Also lost in the always-release approach are the many benefits of harvesting organic, free-swimming protein. Wild fish are better for you and the environment than the farm-raised, plastic-wrapped fish in a grocery store. Fattened on wild foods, wild trout taste better, too.

Anglers who let fish go—and I count myself among them, releasing about 95 percent of my catch—might also want to reconsider

the ethics of what growing numbers of people view as harassing fish for fun. For instance, in Germany, where catch-and-release is considered inhumane, all sport-caught fish above certain sizes must be harvested. In *The Founding Fish*, best-selling author—and devoted shad angler who kills all his catch—John McPhee writes, "The idea of playing with things for your own enjoyment while they go through great anguish and suffering is fundamentally wrong."

It's never been proved that fish feel pain or otherwise suffer as we humans understand it. But there's no doubt a hooked fish struggles with all its might to escape. In fact, I'll be the first to admit that that's what makes fighting a fish so much fun.

After conceding that unsettling truth and then factoring in the number of released fish that die anyway, it seems fair to ask which approach to fishing is more defensible: catching and releasing 30 fish in a day, or catching and killing two and then calling it a day?

Something wrong

Eileen Ryce remembers the moment she realized that catch-and-release might have gone a bit overboard. "A few years ago we were at the Wolf Creek Bridge on the Missouri and watched a boy fishing from shore land a nice rainbow and put it on a stringer," says the head of FWP's Fisheries Division. "Two guys in a boat who were drifting past started giving him a hard time about keeping his fish, which was perfectly legal and biologically supported by our regulations. I thought: 'Something is wrong with this picture.'"

One problem is that many anglers now take it upon themselves to determine—and enforce through public shaming—which levels of harvest are appropriate. Ryce says that's where FWP comes in. "Each year we combine angler input with fish population and creel surveys to determine just how much harvest each fishery can sustain," she says.

If you want to know if it's okay to keep a fish, simply check the FWP regulations.

Another concern with "harvest shaming" is that it assumes a moral hierarchy in the angling universe, with dry-fly purists on top and bait anglers on the bottom. "But no single group of anglers has a monopoly on conservation ethics," Shattuck, the Native Species Program coordinator, says. "Everyone wants

BUMPER STICKER BACKLASH Harvest anglers have responded to perceived prejudice with slogans of their own. Wrote one fishing site blogger about displaying the sticker shown here: "I just want to piss off the out-of-state fishers wearing $2,000 of fly-fishing gear who look down on those of us who actually catch and eat trout."

CAMP TRADITION Eating fish remains popular among backcountry campers. But even on some high mountain lakes, anglers report feeling peer pressure to let all of their trout go, even though FWP stocks these waters specifically for harvest.

to do the right thing."

The right thing, suggest FWP fisheries biologists, might be spending more time helping them protect trout habitat (contact your local fisheries office for suggestions) and less time worrying about whether someone keeps a few fish for the smoker. "I know they mean well," Schmetterling says, "but fly anglers who scorn spin and bait anglers are just driving people away from fishing altogether. When you consider actual threats like aquatic invasive species, chronic dewatering, and climate change, that's the last thing our streams and rivers need."

A certain amount of catch-and-release definitely remains essential for sustaining Montana's renowned trout fisheries. Rivers can't support harvest levels like they did when Granddad and his pals filled their wicker baskets every weekend.

But not every trout needs to go back in the water. In fact, some fisheries could even benefit from additional harvest. With that in mind, anglers who follow regulations set by FWP fisheries professionals and keep a few trout can feel just as good about their actions as those who let theirs swim away.

SHARED PASSION Whether using a size 18 PMD emerger, a #3 Mepps spinner, or a piece of night crawler, all trout anglers love to catch fish. Some may differ on what to do with a trout after it's in the net, but all can agree that hooking a big rainbow, brown, or cutthroat is one of the great thrills of fishing in Montana.

Walleye start receiving the catch-and-release treatment

The walleye's sweet, bone-free fillets have long made it a food fish favorite. So it may come as a surprise that more and more walleye anglers are releasing some of their catch—and demanding others do, too. "I've seen it at the cleaning station when someone is filleting a 24-inch walleye and they start getting the stink-eye from other anglers or have rude comments thrown their way—even though there's no biological justification for letting that fish go," says Heath Headley, FWP fisheries biologist at Fort Peck Reservoir.

Headley says many walleye anglers commonly release large fish to "protect the prime spawners." In fact, reservoirs have plenty of eggs each spring from the tens of thousands or even millions of walleye swimming there. "What usually limits walleye numbers and average size is spawning habitat and decent water levels, not the lack of eggs," Headley says.

LET IT GO? A walleye this size is so old that, if released, it would likely die before another angler could ever catch it. As for egg production, most reservoirs don't need more walleye eggs; they need more walleye spawning habitat.

Canyon Ferry's walleye population could benefit from far more harvest, though of small fish, not big ones, says Adam Strainer, FWP fisheries biologist in Helena. The reservoir is swarming with 10- to 13-inchers. "If anglers want to see more fish over 20 inches, they'll have to start keeping a lot more of those little guys," Strainer says. The rate of released walleye has increased from 10 percent to 60 percent over the past two decades, while the average length has dropped from 18 inches to 13 inches. "If anglers don't start taking more small fish home over the next two years, there won't be enough food for fish to get bigger."

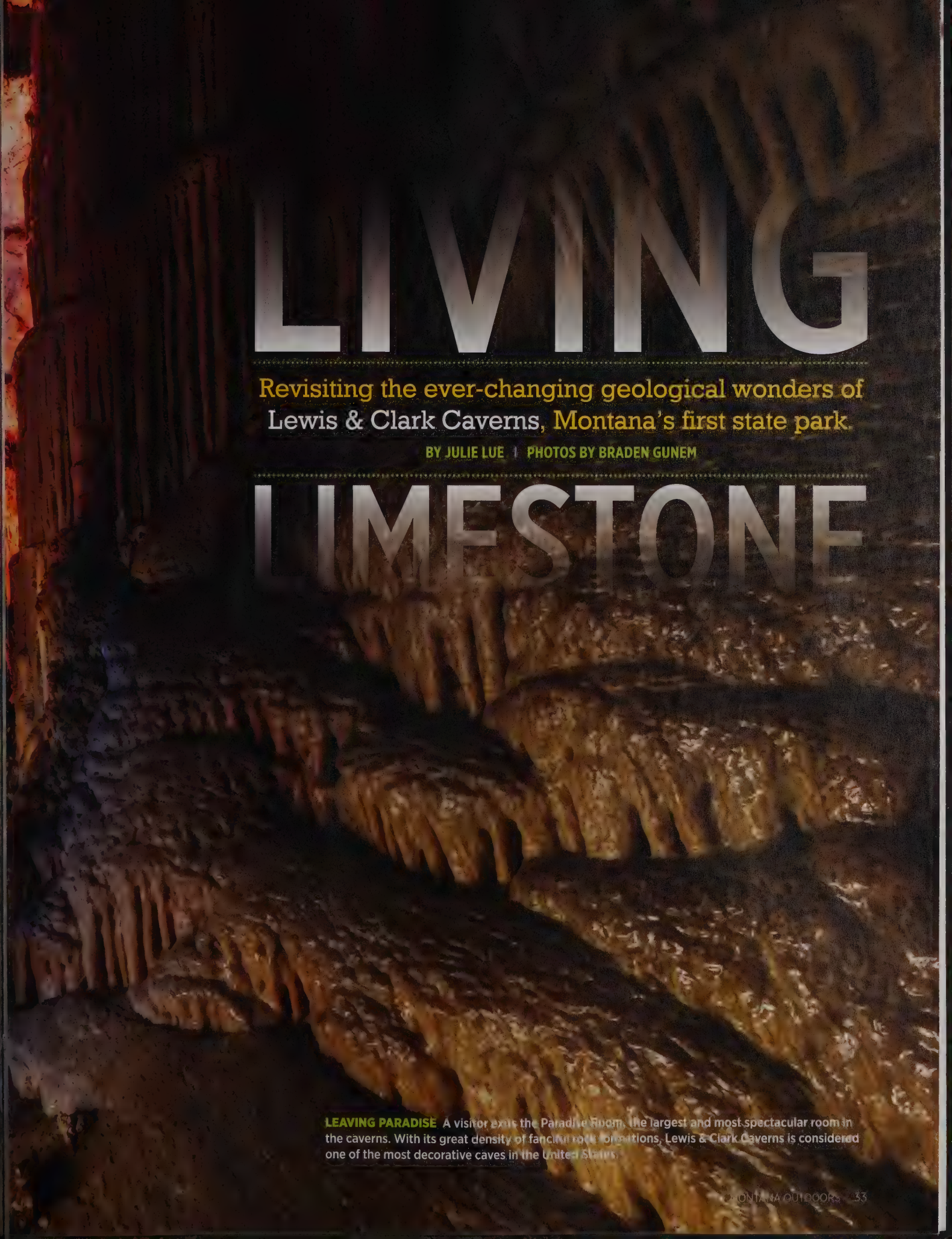
Strainer and Headley point out that the effects of walleye harvest differ from one reservoir to the next. For instance, Canyon Ferry is small enough and has enough fishing pressure for harvest to affect average fish size. "But Fort Peck is such a large system and fishing pressure is so limited that harvest isn't a factor," Headley says. "If some anglers want to release a big walleye there, by all means, go ahead. But if you want to keep a big Fort Peck walleye to eat or have mounted, you shouldn't be ashamed. In no way will that harvest affect the fish population or what anyone else catches down the road." ■

CLOCKWISE FROM LEFT: JOHN LAMBING; LUKE DURAN; JAKE PETERSON; ARNIE GIDLOW

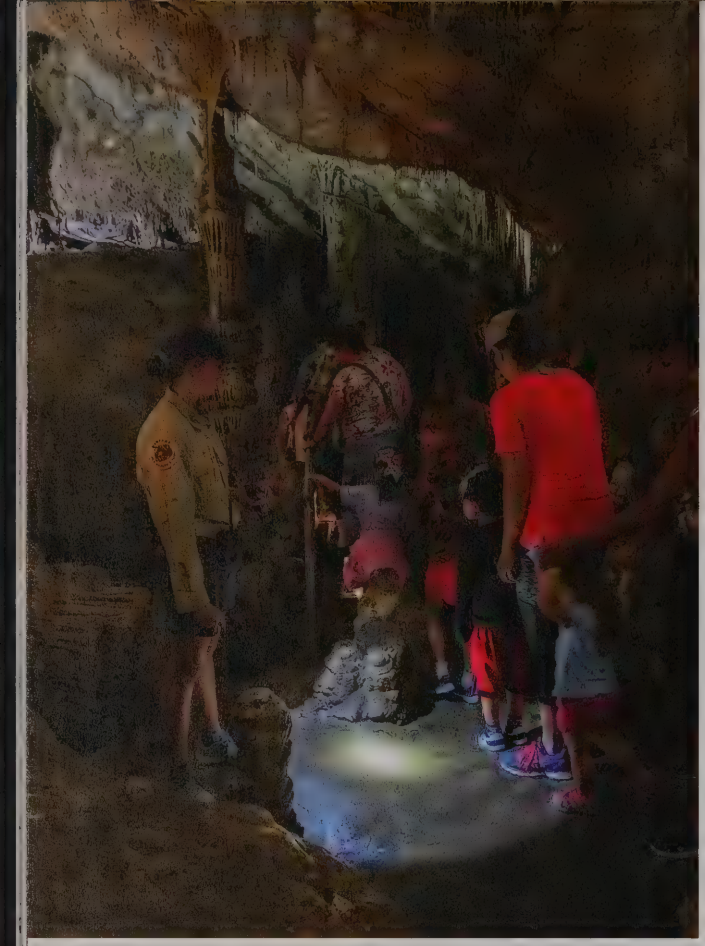
LIVING LIMESTONE

Revisiting the ever-changing geological wonders of Lewis & Clark Caverns, Montana's first state park.

BY JULIE LUE | PHOTOS BY BRADEN GUNEM



LEAVING PARADISE A visitor exits the Paradise Room, the largest and most spectacular room in the caverns. With its great density of fanciful rock formations, Lewis & Clark Caverns is considered one of the most decorative caves in the United States.



"Don't think about it and you'll be fine," our guide, Erin Young-Dahl, reassures us after explaining that the shadowy abyss to our left is a 90-foot-deep pit. No doubt she's right, but I still clutch the handrail as I follow my sons down the stairs into Cave Mountain. At least the pit has caught the attention of my 14-year-old, who looks back at me with wide eyes and a nervous smile.

As we wind our way into the chilly caverns, bare walls, ceilings, and floors give way to surfaces that appear to be dripping with limestone. At times, "headache" rocks and other overhanging formations require us to stoop, duck, or waddle. My 17-year-old, at just over six feet, sometimes looks like he is folded in half. A nimble, gray-haired woman in front of me says, "I'm glad I didn't wait until I was older to do this."

Minutes ago, we were hiking through groves of juniper and limber pine outside the mountain. Now we are inside a still, quiet world where the only sound is our hushed voices—kept low so we don't disturb the bats—and the scrape of our shoes on stone.

On a stormy summer day, my sons and I are taking the Classic Cave Tour at Lewis & Clark Caverns State Park. This is a first visit for my kids and a second for me; I toured the cave as a child on my first trip to Montana. But I remember nothing. My only memories of a cave are from one in the Ozarks. Or so I believe.

When our group reaches the Beaver Slide, the boys and I wait as the others, one by one, sit on the damp rock and glide out of sight. The slide's brown, marbled-looking surface is buffed to a gloss by the behinds of countless cave visitors. Its grade is gentle. At a playground, a slide like this probably would be considered suitable for preschoolers, if the preschoolers didn't mind sliding into the unknown. Peering around the bend, my younger son asks if we've taken the more adventurous tour option by mistake.

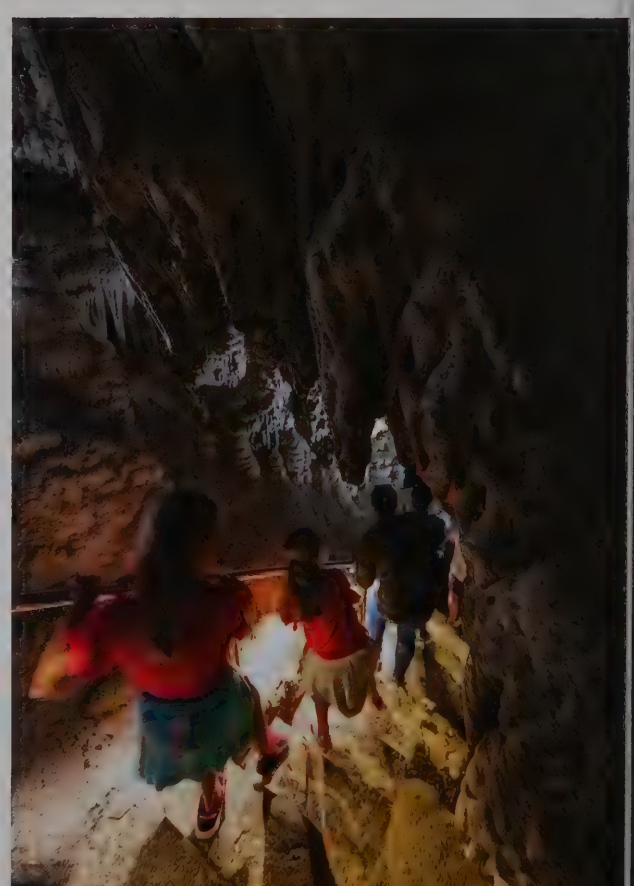
Suddenly I realize I know what's at the bottom of the slide. *This* is the cave I remember, not the one in the Ozarks. Decades ago, I surely polished this same patch of rock with my own backside.

From then on, a feeling of déjà vu accompanies me as we twist and turn through the cave's rooms and passages—descending a total of more than 500 stairs and ascending nearly 100. Toward the tour's end, in the Paradise Room, the largest and most spectacular in the caverns, I stand in a spot that feels strangely familiar and stare at wonders I know I've seen before.

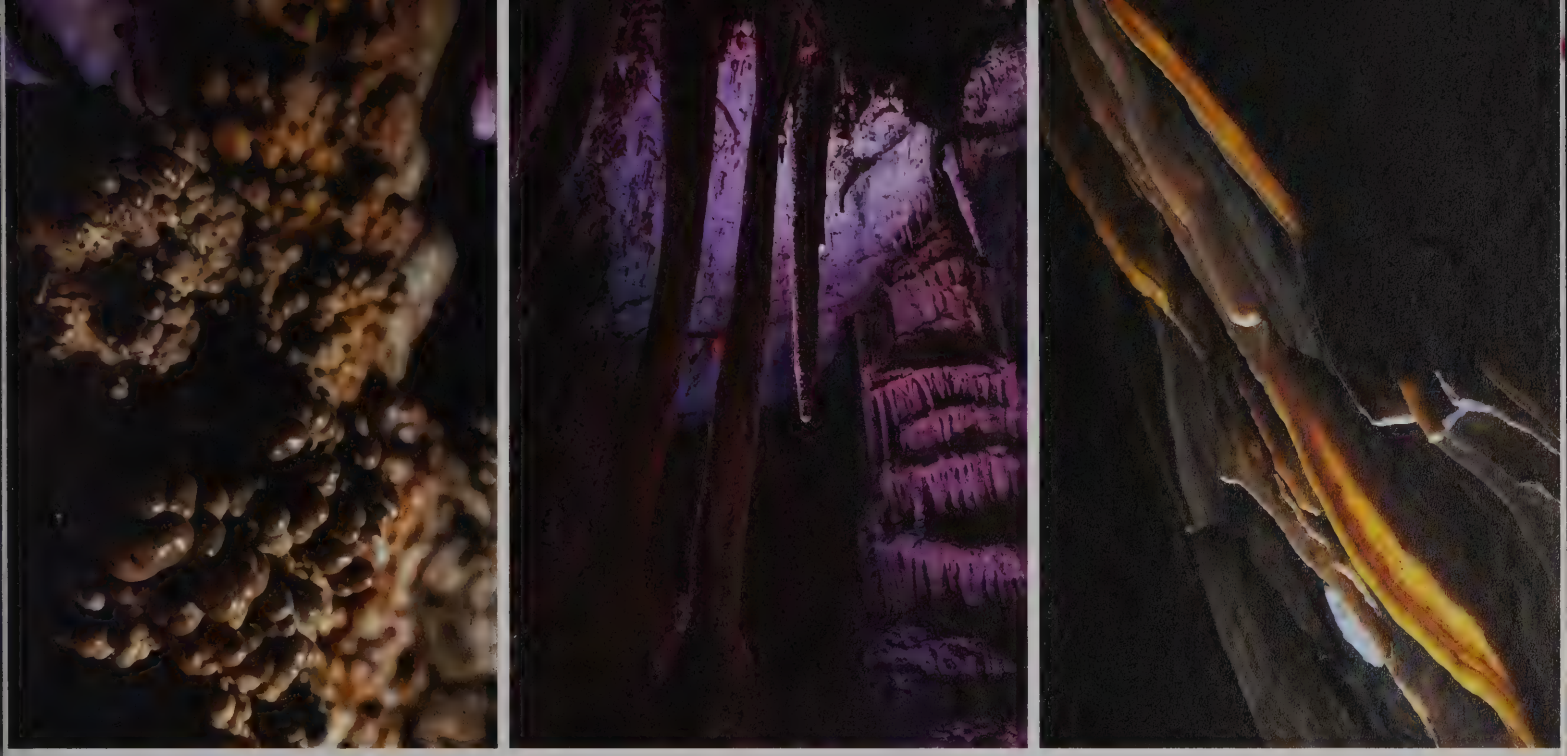
Some caves are jewel boxes, but this one is a candy shop, packed with fanciful stone shapes in shades of cream and caramel and cocoa. While many retain the classic icicle appearance associated with stalactites and stalagmites, others look like massive wedding cakes, milk chocolate fountains, or half-melted ice cream sundaes. Nearly every patch of rock is decorated as if by cake icing squeezed from a giant pastry tube.

In the 20 years I've lived in Montana, I have driven I-90 between Missoula and Bozeman countless times without taking the turnoff for Lewis & Clark Caverns. Standing

WATCH YOUR STEP Above left: FWP caverns guide Kirsten Rothenbucher shines her flashlight on a potential stumbling formation as visitors enter the Cathedral Room, the second largest in the caverns. Below: A family descends deep into the caverns using the newly installed handrails and lighting system to maintain steady footing. Opposite bottom: Early explorers and visitors navigated the caverns with candles and lanterns, found in the upper visitor center museum. During the park's special holiday candlelight tours each December, modern visitors can share the eerie experience.



Julie Lue is a writer in Florence. Braden Gunem is a photographer in Crested Butte, Colorado.



FREAKY FORMATIONS From left to right: "Cave popcorn," or globulites, are formed as water seeping from walls flows over preexisting calcite, aragonite, or gypsum crystals, rounding them off into globular clusters; stalactites hang from the cave ceiling next to stalagmites growing up from the floor; "cave bacon," or layered flowstone, is created by deposits of waterborne minerals flowing along the same route for eons.

here in the Paradise Room, I have to ask myself: What took me so long?

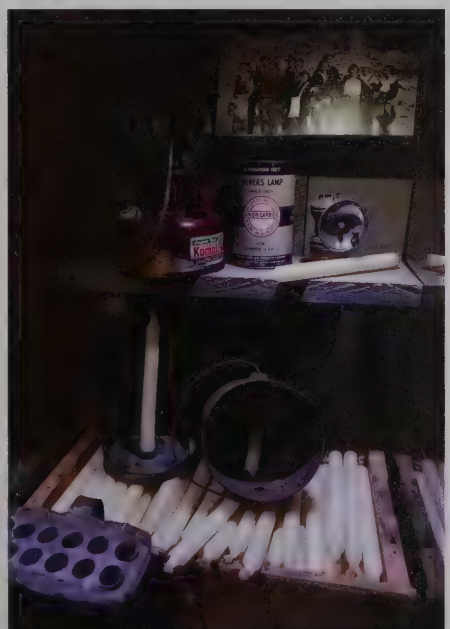
JUST ADD WATER

Of course, what qualifies as a long time in my mind is a mere blip in the cave's lifetime. The caverns are an estimated 2.5 to 3 million years old, and the Mission Canyon limestone in which they have formed dates back hundreds of millions of years.

Along the trail to the cave, my boys and I find clues to the limestone's origins. Fossils of marine creatures like crinoids, brachiopods, and corals testify to an ancient shallow sea. Their shells and exoskeletons, rich in calcium carbonate, accumulated on the bottom of the sea and eventually cemented together to form limestone. As the Rocky Mountains rose, the limestone was pushed and folded, creating countless cracks and fissures. Once it was exposed to the surface, the stage was set for cave building.

Limestone, which harbors most of the world's caves, is easily soluble in water that has been slightly acidified, a process that occurs naturally from contact with carbon dioxide in the air and soil. When acidified rainwater and snowmelt seeped down from above, it filled cracks in the Mission Canyon limestone, dissolving the rock bit by bit, scouring out a maze of passages and rooms. As the nearby Jefferson River cut 1,400 feet into its canyon, the water table dropped and the caverns drained.

Water still found its way into these air-filled spaces, carrying with it dissolved calcium carbonate and redepositing it, ever so slowly, in weird and wonderful shapes called speleothems. Dripping water created stalactites (which hang from a cave ceiling), stalagmites (growing up from the cave floor), and columns. Flowing water formed stone waterfalls and fragile drapes of "cave bacon." Seeping water produced lumpy custers of "cave popcorn," also known as globulites, and delicate helictites, which curve like the arms of a sea anemone. Even now, where fed by water, these cave formations continue to grow.



OUT OF THE DARK

As far as we know, this spectacular array of speleothems developed in darkness until the end of the 19th century. Native Americans probably were aware of the cave, because on cold days water vapor rises like smoke from its mouth. Yet there's no sign they entered. And despite the cave's name, Meriwether Lewis and William Clark knew nothing of the cave when they traveled past while making their way up the Jefferson River in 1805.

But the caverns could not remain secret forever. Ranchers Tom Williams and Bert Pannell found the entrance in 1892. The explorations of Williams and others six years later encouraged miner and investor Dan Morrison to turn the cave into a tourist attraction. Wonders concealed by darkness for millions of years were now revealed by candlelight.

Unfortunately for Morrison, he held no claim to the cave; the General Land Office determined it was property of the Northern Pacific Railway, which donated it to the federal government for preservation. In 1908, the caverns became the United States' 12th national monument—though with no appropriated funds for development and management and no plan to open the cave to the public (even as Morrison continued to lead unauthorized tours).

Eventually, the federal government gave the land to the state of Montana and agreed

GAZE IN THE MAZE Top: Visitors descend into the Brown Waterfall Room, where a cascade of rock appears to spill from a ledge like a river torrent. In addition to flowing water, limestone formations in Lewis & Clark Caverns resemble flowing lava, melted ice cream sundaes, fountains of molten chocolate, and wedding cakes. Above: Using a fluorescent light to see minerals in a cave rock. Right: A family pauses to photograph the Grand Finale Room toward the end of the tour. The popular spot is part of both the two-hour Classic Cave Tour and the easier hour-long Paradise Tour. Tours run from May 1 until September 30.

to develop the site using the Civilian Conservation Corps (CCC), a Great Depression-era work program for young men. The land was officially transferred in 1937, and a year later Montana's first state park was born.

A NEW LIGHT

At the main visitor center, I catch up with Rhea Armstrong, manager of Lewis & Clark Caverns State Park—one of Montana's 55 state parks. Armstrong, who grew up in nearby Cardwell, has worked at the caverns since she was in college studying to become a teacher. Her family connections to the cave go back two generations.

As we talk, a steady stream of people pass through the doors of the visitor center, built in 2010. This is peak season at one of the West's most notable caves; 70,000 people visit the park each year, and 60,000 of them tour the caverns.

"I think that we've grown faster than we can fully accommodate, but we still want everyone to have the best experience ever," Armstrong says.

To that end, she and her team have been working to improve electrical, sewer, and other infrastructure and services both inside and outside the caverns. The most visible improvement is a new lighting and handrail system, installed in the Paradise Room in 2007 and the rest of the cave during the winter of 2018-19.

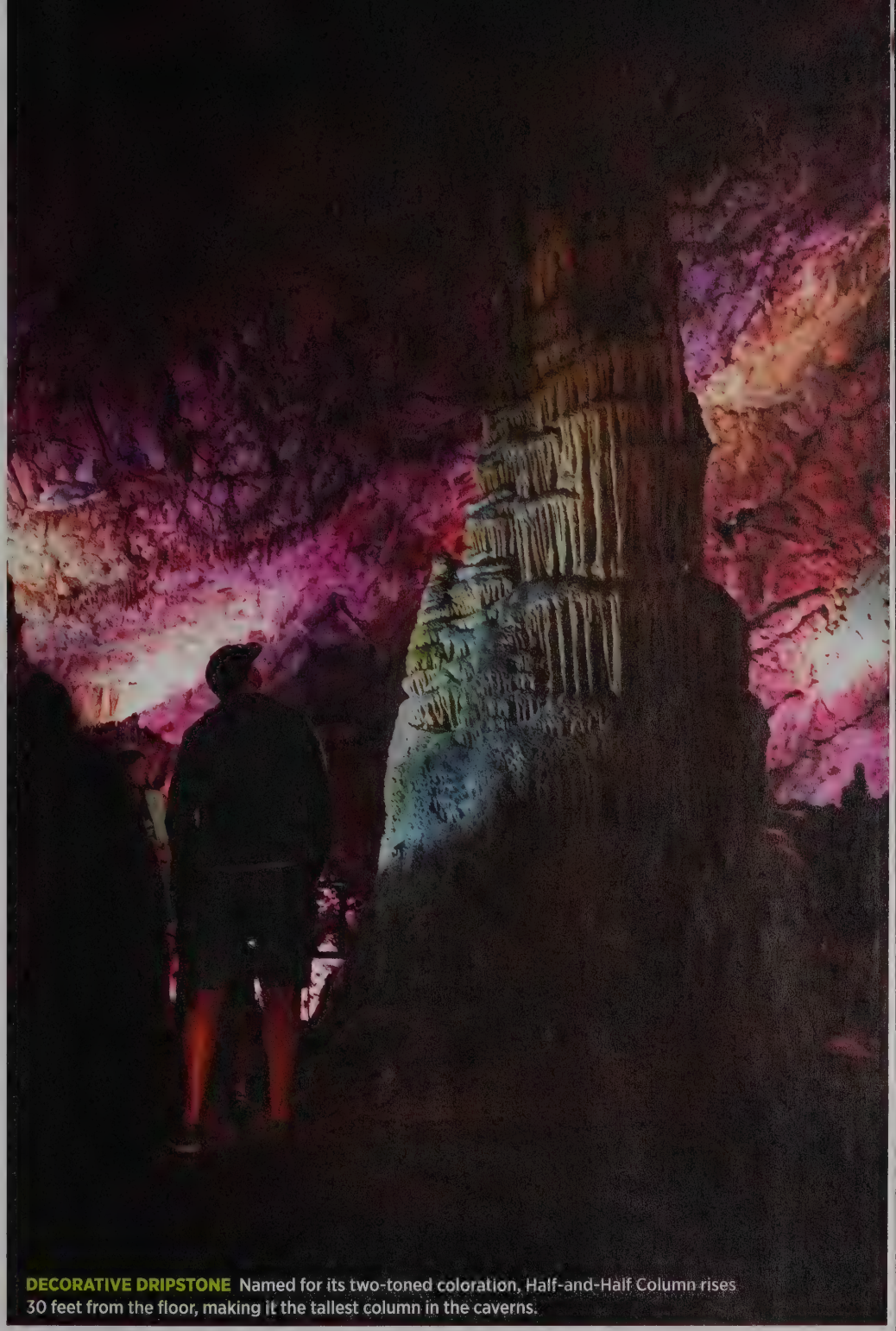
This $1.75 million project replaced potentially hazardous electrical cables and fixtures from the early 1940s, as well as old handrails made of metal pipe. Incandescent lights were replaced with more efficient, cooler LEDs that are less likely to cause algal growth or dry out sensitive cave formations. The new lights also more clearly illuminate the rock formations, including many previously hidden in shadow.

LEDs along the underside of the new stainless steel handrails create enhanced safety and comfort for people touring the cave, according to Armstrong. "The light's not in your eyes, it's down at your feet," she says. "And with more light in the rooms, you're seeing better." The new handrails have been carefully designed to provide the best grip for each location, she adds. "When you're ducking, you need a shorter handrail."

Another major consideration in the lighting project: aesthetics. Armstrong recalls how the electrical contractor patiently adjusted lighting behind strips of cave bacon until she and park ranger Julia Smit reacted with a "wow." It's a word my sons and I hear frequently from our group.

Like my family, most visitors take the two-hour, two-mile Classic Cave Tour, which includes 600 stairs. (In late December, the park offers a candlelight version.) People with very young children or physical limitations may instead opt for the hour-long Paradise Tour, which requires only a mile of walking and a dozen steps inside the cave. Those looking for more adventure can take the lights-off, reservation-only Wild Tour, which entails strapping on a headlamp and crawling through tight spaces.

There's also a world to discover outside the caverns. "Because the cave is such a draw, I don't think people realize this is a 3,000-acre park," Armstrong says.



DECORATIVE DRIPSTONE Named for its two-toned coloration, Half-and-Half Column rises 30 feet from the floor, making it the tallest column in the caverns.

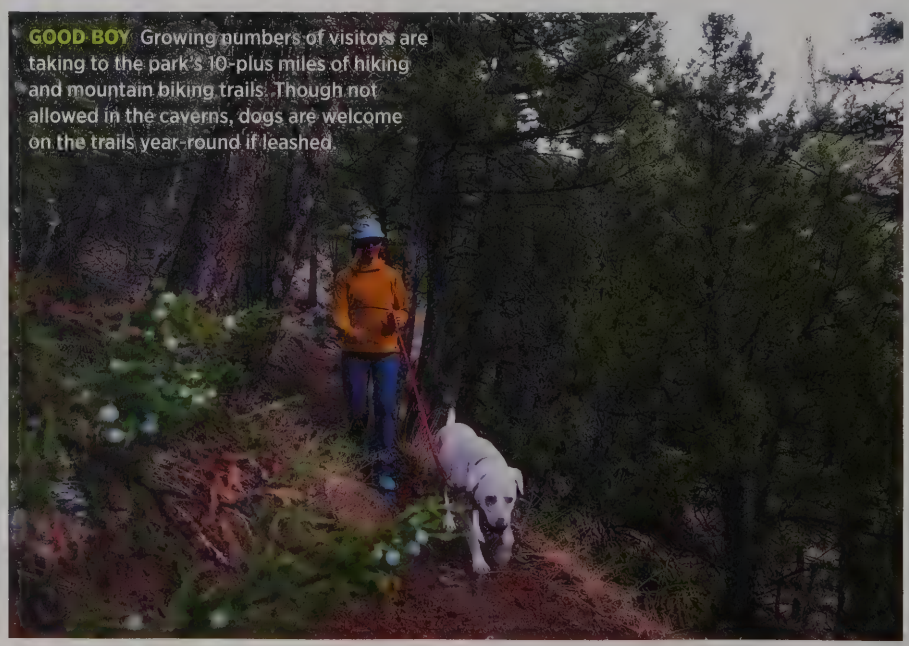
FAMILY FRIENDLY The state park's popular campground fills up early throughout the summer. In addition to 40 campsites, the park offers three cabins and a tipi for rent as well as picnic tables, a playground, and, in summer, guided nature day tours and evening interpretive talks.

BEYOND THE CAVE

Most visitors know about the park's popular campground, with its 40 sites (about half with electrical hookups), three cabins, and a tipi. And many take advantage of the 10-mile trail system, used primarily by hikers in summer and mountain bikers during shoulder seasons (these trails are often snow-free when other area trails at higher elevations are impassable). But fewer may be aware of the park's historic district, recognized in 2018 under the National Register of Historic Places.

The district features projects constructed by the CCC from 1935 to 1941. Inside the cave, crews carved hundreds of stone steps and blasted a 538-foot exit tunnel. Outside, they built the road, cave access trails, an overlook, and the upper visitor center, designed in the era's rustic "Parkitecture" style. The workers' skill is especially visible in the closely fitted stonework that makes up several culverts and a beautifully arched keystone bridge (ask park staff for directions).

Their attention to detail also shows in the first building constructed for Montana's first state park, a small stone latrine perched above the upper picnic area. Built in 1938, it's a communal outhouse with "double-seaters on both sides but no stall in between," in Armstrong's words.



GOOD BOY Growing numbers of visitors are taking to the park's 10-plus miles of hiking and mountain biking trails. Though not allowed in the caverns, dogs are welcome on the trails year-round if leashed.

WILD THINGS

A trip to the caverns is "really about taking the small moments to enjoy the park and the natural world that we have here, both inside and outside the cave," say Smit, the park ranger. To help people appreciate these moments, interpreters lead programs on geology, history, and the area's diverse plants and wildlife. Thanks to a broad range of elevations, from 4,200 feet at the Jefferson River to almost 6,000 feet atop Cave Mountain, the park supports an impressive variety of habitats.

Assistant park manager Tom Forwood, who leads birding field trips, says roughly

140 bird species have been identified at the park, including two—the black-throated gray warbler and the Virginia's warbler—rarely seen in Montana.

But the park's 10 species of bats are clearly the wildlife stars, featured in talks and tours during Bat Week each August. Seven species have been found in the cave, where guides are careful to ensure that no one is wearing or carrying anything that has been in a mine or another cave. The measures prevent introduction of white-nose syndrome, a fungal disease that has devastated bat populations in dozens of states east of Montana.

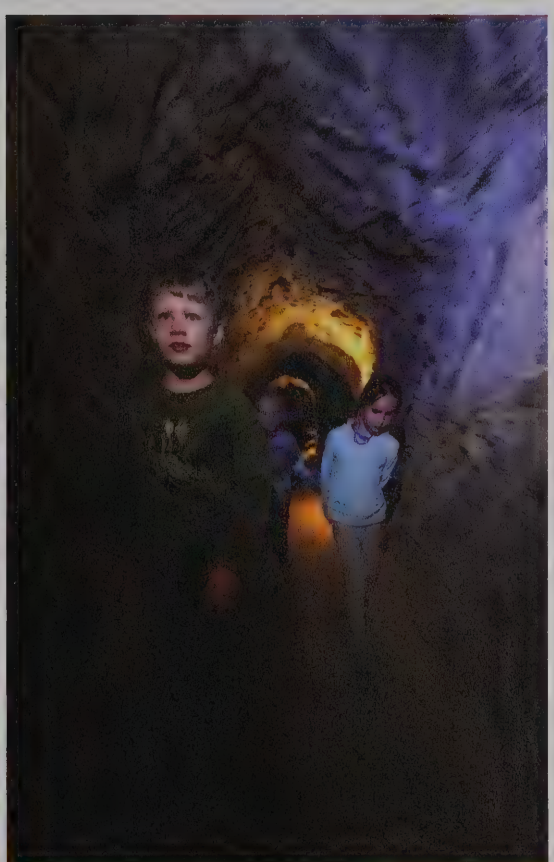
During our time in the caverns, my boys and I catch a glimpse of a maternity colony of Townsend's big-eared bats: What looks like a clump of silky brown "puppies" are clinging upside down from the cave wall. According to Forwood, roughly 25 to 150 bats cluster in the maternity colony in June. In September, most disperse to parts unknown from their summer refuge.

SAFE FROM THE STORM

As long as the lights are on, I feel a sense of refuge in the cave myself. Near the end of our tour, a radio call warns our guide, Young-Dahl, of a dangerous thunderstorm outside. But we hear nothing from the Paradise Room; no crack of lightning or rumble of thunder can reach us. I find myself imagining how rainwater from the storm will eventually trickle down into the cave, each drop making a tiny revision to its architecture.

Young-Dahl gives us a refresher on lightning safety while we wait for the storm to pass. When another radio call gives us the all-clear, our group hurries down the exit tunnel and into the light. As we jog down the trail, splashing through puddles, I wonder if my sons will return someday, years from now, possibly bringing children of their own. If we continue as careful stewards of this underground wonderland, I know it will still be here, filled with shapes, spaces, and formations that remind us how nature is both timeless and ever-changing. And that we can find life and beauty in some of the world's darkest places.

Due to the coronavirus outbreak, Lewis & Clark Caverns and other Montana state parks may be closed in 2020 for indeterminate periods of time. Visit stateparks.mt.gov for updates, or call the park at (406) 287-3541.



WONDERS ABOVE AND BELOW Above left: The park's original visitor center was built by the CCC in the 1930s. It and several other structures were designated in 2018 as a national historic district. Known today as the upper visitor center, it houses a small museum and serves as the park's base for cave tours. Lower left: Taking a selfie at the Grand Finale Room. Above: Heading out the 538-foot-long exit tunnel carved by the CCC.

BLAMING THE BIRDS

Are pelicans, cormorants, and other winged piscivores harming game fish populations?

BY JACK BALLARD

Last September, game wardens with Montana Fish, Wildlife & Parks discovered roughly a dozen dead pelicans along a stretch of the Bighorn River a few miles downstream from Yellowtail Dam. The tailwater below the dam is considered one of the nation's top trout waters, though in recent years fish numbers have declined significantly. Game wardens said the pelicans, protected under federal law, were killed with a shotgun, and dozens more may have been shot and killed in the same area.

FWP officials know that many anglers blame the fish-eating birds for depressed trout numbers and suspect that some anglers are dishing out vigilante "justice."

In Montana, the American white pelican population has grown steadily during the 20th and early 21st centuries, according to *Birds of Montana*. What's more, there's no disputing that pelicans eat fish. An adult pelican ingests from 20 to 40 percent (3 to 6 pounds) of its 15-pound body weight in fish every day.

In addition to the Bighorn, FWP biologists report bird-related complaints from anglers on the Missouri and other trout rivers, and on Canyon Ferry Reservoir. In addition to pelicans, anglers are expressing concern about double-crested cormorants, another federally protected piscivore whose numbers have increased over the past 50 years after plummeting due to widespread DDT application in the mid-1900s. Fingerlings and adult fish in Montana lakes and streams fall prey to great blue herons and ospreys, too.

In short, there's no scarcity of fish-eating birds. And sometimes they eat trout. "Trout are especially delectable," says David Schmetterling, FWP Fisheries Research Program coordinator in Missoula. "They don't have a lot of bones or spines on the body, so they go down easy."

Yet Schmetterling points out that the diet of most fish-eating birds is mostly species *other* than trout and other game fish. Carp, suckers, and small nongame fish—abundant in all of Montana's river and reservoir sport fisheries—account for most of what pelicans and cormorants consume. For instance, a 2006 FWP study on Canyon Ferry Reservoir, stocked with tens of thousands of eight-inch rainbow trout each year, looked at stomach samples from 12 pelicans. Researchers found only a single trout among mostly carp and crayfish. The study also looked at stomach contents from 52 cormorants and found that the birds were eating stonecats, a thumb-size member of the catfish family, far more than any other fish species. Though the study is 14 years old, biologists say that there's no reason to think that bird diets have changed since then.

A research project on Pathfinder Reservoir in Wyoming found that 77 percent of pelicans' diet (by weight) consisted of common carp and white suckers. The big-billed birds also scooped up Iowa darters (a finger-long member of the perch family), tiger salamanders, crayfish, and fathead minnows. "Predatory birds take the most available fish species," says Schmetterling. "And in almost every reservoir and river, those aren't game fish species."

SHUTTERSTOCK

Jack Ballard of Red Lodge is the author of several books, most recently Large Mammals of the Rocky Mountains.

COMEBACK A double-crested cormorant spreads its wings to dry after diving for fish. Numbers have increased on large rivers and reservoirs after the banning of DDT, which devastated populations. Though they eat fish, cormorants prefer smaller nongame species like stonecats rather than trout.

"Predatory birds take the most available fish species, and in almost every reservoir and river, those aren't game fish species."

MOSTLY SHALLOW

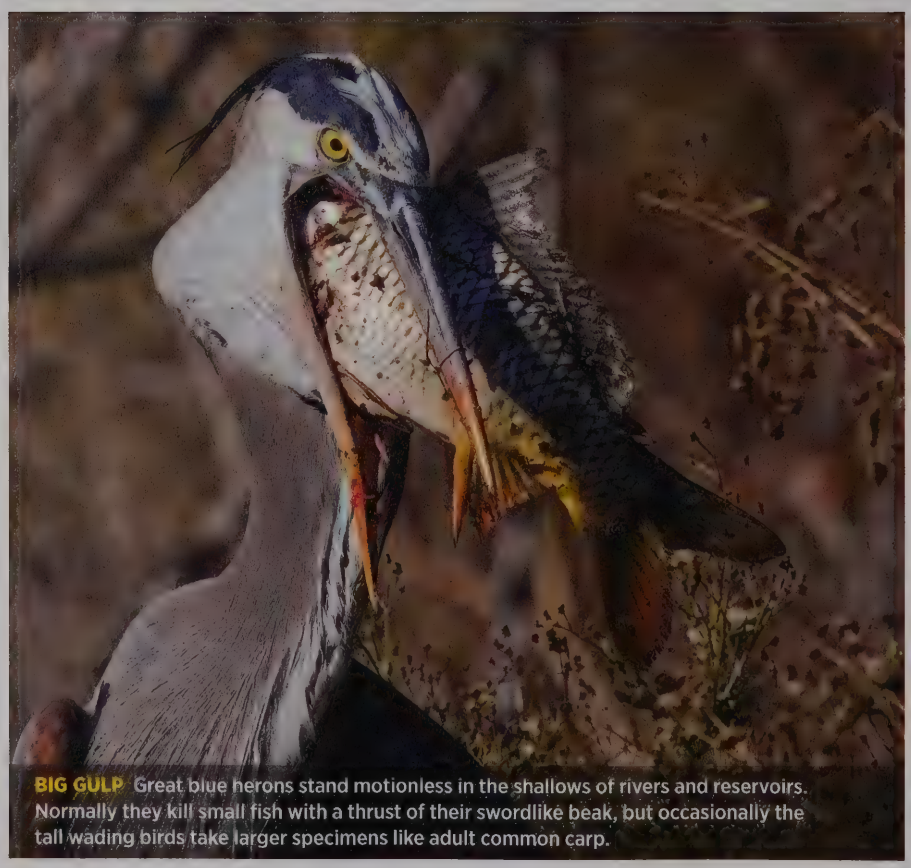
Each bird species has a different method of nabbing fish. Double-crested cormorants—dark, streamlined birds often mistaken for ducks—dive into the water and pursue fish with the powerful propulsion of their webbed feet. Cormorants' powerful bills are hooked at the tip, enabling them to easily control wriggling fish. They tend to work the shallows but can dive to 25 feet when fishing.

Pelicans use the pumpkin-colored pouch on their bill similar to how an angler scoops fish with a hand net. Groups of pelicans, known as squadrons, often hunt cooperatively, "herding" schools of minnows and other fish into shallow water less than six feet deep where they're more easily scooped up. The big birds capably handle surprisingly large fish, too. At Pyramid Lake, Utah, researchers have documented pelicans occasionally taking carp and trout weighing up to 10 pounds. Pelicans sometimes feed at night, when crawfish and certain fish species are more abundant in shallow water than during the day.

Great blue herons stand motionless at the edges of rivers and reservoirs waiting for passing fish, which they catch with a swift, powerful thrust of their bill. The long-legged birds are limited to hunting in water no deeper than two feet and usually stick to even shallower water along the shoreline. Small fish make up most of a great blue heron's diet, though the birds are known to spear frogs, snakes, and even ducklings and small mammals.

Ospreys capture fish by diving into water after spotting them from overhead. The raptors are uniquely equipped for fishing. Their feathers are dense and oily like those

ROUGH FISH ROUNDUP White pelicans often feed in groups, herding smaller fish into the middle before scooping them up in their oversize bill. In one FWP study, nongame species like carp, along with crayfish, were the most common food item found in the birds' stomachs.



BIG GULP Great blue herons stand motionless in the shallows of rivers and reservoirs. Normally they kill small fish with a thrust of their swordlike beak, but occasionally the tall wading birds take larger specimens like adult common carp.

of ducks and geese, allowing them to shed water. Unlike bald eagles, which only pluck fish from the water surface, ospreys may fully submerge when diving feet-first in pursuit of prey. Valves on their nostrils seal shut to prevent the bird from breathing water. Their opposable hind talons aid in grasping wriggling fish, as do tiny spines on the bottom of their feet known as "spicules."

For centuries, ospreys worldwide were maligned by commercial and recreational fishermen as pests thought to significantly reduce the number of fish available for humans. While it's true that ospreys take mostly trout, studies indicate the raptors remove only a tiny percentage from a population and have no effect on recreational angling.

ARTIFICIAL CONCENTRATIONS

In natural environments with native fish populations, pelicans, cormorants, and herons similarly have little effect on game fish populations. That's how piscivores and fish have coexisted for eons.

But effects are different in manmade environments. "Bird predation tends to concentrate in places altered by humans where fish

ALL PHOTOS SHUTTERSTOCK

FISH HAWK Ospreys dive for trout and other game and nongame species, using their specially engineered talons to grasp the slippery prey. Studies show that no game fish populations have ever been significantly reduced from osprey predation.

> **"We know that pelicans are not the reason that trout numbers are down on the Bighorn."**

numbers are artifically concentrated," Allison Begley, FWP avian conservation biologist, says. If not protected by nets, commercial catfish ponds in the South and hatchery ponds in other states can see substantial losses. Stocked trout ponds concentrate fish in ways that practically invite avian predators.

Although pelicans and cormorants are protected by the 1918 Migratory Bird Treaty Act, many states have been granted permission by the U.S. Fish & Wildlife Service to kill both species. According to Schmetterling, Montana has resisted such extreme measures. "Many people don't think it's right to create fish-rich conditions that attract species like cormorants and pelicans, and then go out and shoot the birds," he says.

In Montana, tailwater fisheries below dams create human-altered, fish-dense environments where piscivores gather in unnaturally high numbers. Trout and other fish may be stunned or injured when passing through hydroelectric turbines or after tumbling down a spillway, making them easy pickings. "Like human anglers, pelicans love tailwaters for the water clarity and high fish densities," says Begley.

It can be especially frustrating for anglers who aren't catching fish to see pelicans paddling nearby. "Pelicans can temporarily decrease fishing opportunities by putting trout 'down.' But we track trout numbers each year on all the major rivers, and there's no evidence that pelicans or any other bird piscivores harm game fish populations anywhere," Schmetterling says.

That's true even on the Bighorn, where 2019 trout numbers were the lowest on record. Mike Ruggles, FWP regional fisheries manager in Billings, says the population crash is due to water releases from Yellowtail Dam, operated by the Bureau of Reclamation. The releases have either been too high or too low for adequate trout reproduction downstream. In some cases, ill-timed flows have nearly wiped out all the eggs or fry of the river's rainbow and brown trout. "We know that pelicans are not the reason that trout numbers are down on the Bighorn," Ruggles says.

Mike Scott, a native Montanan, has been a fly-fishing guide on the Missouri River for more than 30 years and sees pelicans every day. "They sometimes shut the fishing down to a degree, but I've also seen trout rising right next to where pelicans are swimming," he says. One time Scott watched two pelicans nab a couple of healthy adult trout when the fish were on the surface chasing bugs. But he's observed many more instances where the opportunistic birds preyed on exhausted fish released by anglers. "I've been a vocal defender of pelicans," says Scott. "When I was a kid, there really weren't any around. I like to see them on the river."

So do others who frequent rivers and reservoirs. "A squadron of white pelicans soaring overhead is one of the great wildlife sights in Montana," Schmetterling says. "I'm not the only one who considers it odd that someone would actually shoot those majestic birds, especially when doing so is a federal offense and wouldn't improve their fishing one bit."

Reassurance

Maybe there's been a time when the natural world and outdoor recreation were more important to our collective psyche than they are right now. But I can't recall when.

We're all a bit jittery, as local and world events change from day to day or even by the hour. Nothing seems certain. The air hums with a nervous vibe.

Which is why I'm yearning, even more than usual, to get outside. I need to see that some things aren't being upended by the latest press conference, overseas bulletin, or Dow Jones update. I suspect you are, too.

Fortunately, it's May in Montana, with the entire summer ahead of us. Excuse me while I let out a sigh of relief.

How reassuring it will be to drive past rivers and see trout dappling the surface. To pass pickups parked along streamside pulloffs, license plates covered in mayflies and caddis.

Already, yellow warblers are announcing spring from the tops of streamside cottonwoods. In mature conifer forests, western tanagers are flitting from tree to tree. Atop fence posts, meadowlarks are welcoming the warming weather with their amplified anthems. Wildflowers are blooming everywhere.

Walleye are still shallow right now and will be for a few more weeks, before moving deeper as the water warms. That's how it has always been with walleye, and this summer will be no different.

Mountain biking trails have begun drying out, and soon riders will be whizzing through forests, looking down for rocks and up ahead for bears. Rivers are running high with spring runoff, making for dangerous (or exhilarating, depending on your skill level) whitewater rafting and kayaking. Peak baggers have their maps spread out on kitchen tables, planning which summits to tackle next.

State parks are preparing for the summer rush, with maintenance crews finishing a paint job here, a cleanup there, making everything shipshape for guests.

People are breaking out their camping gear, smelling wood smoke in sleeping bags pulled from storage. They're checking tents for holes, seeing if the pop-up camper still pops up, buying spare mantles for the propane lantern.

Turkey hunters are out in the woods at sunup, as they always are this time of year, listening for the gobbles of lovelorn toms.

A friend emails to say she's planning a four-day canoe trip along the Missouri's White Cliffs area. Another calls to say he drew a permit to float the Smith.

It's almost summer in Montana. I can hardly wait.

Earlier this spring I was walking the dog after dark and heard hundreds of snow geese passing over Helena. Illuminated by the city lights, they appeared as ghostly squadrons overhead, making their way north to Freezeout Lake as they have for eons. I thought how fortunate we are, those of us who live in places like this, where we can regularly restore our faith that the natural world still marches on, even during these unsettling times. Where we can step outside and witness timeless rituals that continue whether we see them or not.

I find reassurance in nature's relentless reliability.

Several weeks ago, a red-winged blackbird's scratchy *conk-a-leeee* signaled his springtime arrival at the pond outside my office window, just as he does every year.

Welcome back, I wanted to tell him. Thanks for coming back.

ILLUSTRATION BY STAN FELLOWS

Tom Dickson is editor of Montana Outdoors.

American Avocet

Recurvirostra americana By Lex Hames

During a previous incarnation as a video producer of TV segments on waterfowl and wetlands, I spent countless days walking and even crawling around prairie marshes. Although my job was to film ducks and geese, I grew increasingly fond of those other fascinating denizens of shallow water: shorebirds, especially the American avocet.

To my mind, the avocet is the most elegant and stylish of wading birds. Dressed in a finely tailored suit of white, black, and soft cinnamon, this stately, statuesque bird strides along the shorelines of shallow lakes and marshes like a member of England's royal family out for a stroll. Except that sometimes, when resting, it stands on one leg, which nobility rarely do.

APPEARANCE

With their black-and-white striped wings, cinnamon head carried high, and long legs as trim as walking sticks, male and female avocets cut an elegant appearance. Standing about 18 inches tall, they are one of Montana's larger wading birds.

Avocets change their outfit twice each year. In winter plumage, they lose the rusty shade on the head and breast, and sport strictly black-and-white attire. A flock of winter avocets resembles a herd of tiny flying zebras. The black-and-white stripes, moving with rapid wingbeats, create a dizzying zigzag pattern of dark and light sweeping through the sky. In spring, the cinnamon head coloring returns.

The slender, sharply pointed bill of both sexes curves slightly upward, the female's a bit more than the male's.

SOUND

An avocet produces a series of notes that have a Doppler-like effect. They rise in pitch as they come closer, creating the same impression as when a train rushes toward you with its whistle blowing, the whistle's blast rising in pitch as it draws nearer. As the avocet approaches a ground predator, it raises the pitch of its call, creating the impression that it is approaching faster than it is—a neat trick for a bird defending its nest.

FOOD

For all their delicacy and beauty, avocets make their living in the muck. They're "mudders," working shallow marshes and thin sheets of open water, waving their long, thin bill back and forth like a rapier to nab minnows, crustaceans, and aquatic insects. Like all wading birds, they have long stilt-like legs that hold their body above the water. When walking, the avocet's legs move swiftly up and down, carrying the bird forward in a determined, high-stepping manner.

REPRODUCTION

Avocets nest on flat ground near water in simple structures. Either the female or male creates a scrape in the ground with its breast and feet, then lines the shallow depression with grass, feathers, pebbles, or other small objects. A mating pair engages in elaborate "cross-bill" displays before and after mating—think of crossed swords held high. Both parents incubate the eggs. If the eggs get too warm, one parent dips its belly feathers in the water and returns to cool the nest.

HABITAT

Avocets require shallow marshes and mud flats submerged a few inches where they can stroll and forage for aquatic invertebrates and small fish.

CONSERVATION STATUS

Though avocet numbers have diminished across parts of North America, due mainly to wetland loss, they're still abundant in Montana and other northern Great Plains states. This prairie bird has been here for a long time, making it an important part of our state's natural heritage.

WHERE TO WATCH

Avocets usually arrive at their breeding grounds from late April to late May. Look for them in eastern and central Montana marshes, ponds, and alkaline lakes throughout spring and summer. Avocet-watching hot spots include Freezeout Lake, Benton Lake, and Lake Bowdoin.

Lex Hames is a writer and video producer in Helena.

SCIENTIFIC NAME *Recurvirostra* comes from the Latin *recurvus*, "curved backwards," and *rostrum*, "bill." The avocet's common name derives from the Italian name for a similar bird found in Europe and Eurasia: *avosetta.*

TOP TO BOTTOM: CRAIG & LIZ LARCOM; STEVEN AKRE

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THE **OUTSIDE** IS IN US ALL.

OVERLOOKING TWO MEDICINE VALLEY, BY CHUCK HANEY

Whether it's by hunting, fishing, camping, boating, mountain biking, wildlife watching, or **hiking to a ridge in Glacier National Park**, Montana is a state where everyone can find their own special way to connect with the natural world. Around here, **the outside is in us all.**

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